Diseases of Foreign Forest Trees Growing in the United States

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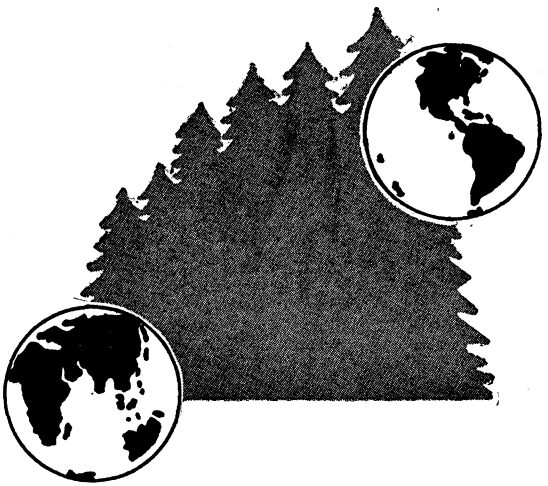
Diseases of Foreign Forest Trees Growing in the United States

An Annotated List



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ACKNOWLEDGMENTS

Information on the occurrence of diseases of foreign trees in this country has been obtained from the "Index of Plant Diseases in the United States," by Freeman Weiss and Muriel J. O'Brien (U. S. Dept. Agr. Plant Dis. Survey Spec. Pub. 1, Parts I–V, 1263 pp., 1950–53). In this work John A. Stevenson's "Foreign Plant Diseases" (U. S. Dept. Agr. unnumbered publication, 198 pp., 1926) has also served as a reliable guide. These two publications have been invaluable.

The author wishes to express his gratitude to Dean George A. Garratt for providing free access to the library of the School of Forestry, Yale University, and to Elbert L. Little, Jr., who checked the scientific names, authors, and common names of the trees, shrubs, and woody vines.

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Diseases of Foreign Forest Trees Growing in the United States[1]

INTRODUCTION

Diseases of forest trees may be briefly defined as abnormal physiology caused by four types of factors, singly or in combination: (a) nonliving, usually referred to as nonparasitic or site factors; (b) animals, including insects and nematodes; (c) plants; and (d) viruses. This handbook deals only with the diseases attributable to plants and viruses as pathological factors.

Even though diseases caused by nonliving factors are not included, it must be clearly understood that low vigor of trees, not only resulting from adverse site factors but also induced by defoliation, can be disastrous because it increases susceptibility to severe attacks by semipathogens. Particularly is this true of planted and exotic trees. Diseases of slight importance on naturally regenerated trees in their native range are often serious to trees on unsuitable sites and may be destructive to exotics. Conversely, obligate parasites tend to attack the most vigorous host trees and leave subnormal ones unscathed. Since subnormal vigor may decrease the danger from obligate parasites, it may increase danger from semiparasites. Although growth vigor of exotics is desirable, it is no guarantee that an exotic will not be attacked if planted extensively.

The pests that cause tree diseases do not confine their activities to international boundaries. Many diseases have been introduced into North America from abroad; for example, white pine blister rust, larch canker, and Ceratocystis (formerly Ceratostomella) disease of elms from Europe, and the chestnut bark disease from China. These introductions into this country and similar ones into many other countries make it essential to have readily available more information on forest tree diseases of all countries.

To this end a survey was made of the infectious forest tree diseases of the world. The causal agents include viruses, bacteria, fungi, and the higher plants known as mistletoes and dwarf mistletoes. Diseases of fruit and nut trees are not included unless the hosts are growing in a wild state.

Robert Hartig, who is rightly called "the father of forest pathology," began his investigations about 1870; and, except for a few earlier publications that have been reviewed, this survey covers the period subsequent to that year.

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[1] The term "trees" is used in the broad sense and includes trees, shrubs, and woody vines.

The publications examined include numerous forestry and arboricultural journals, abstracting journals, reports by forestry organizations, numerous pathological and mycological articles, and recent comprehensive annotated lists of the fungi of some foreign countries.

This survey of the forest tree diseases of the world has been in progress for a number of years, and a series of three Agriculture Handbooks is planned to cover the results. The first of the series, Diseases of North American Forest Trees Planted Abroad, was issued as Agriculture Handbook No. 100.

As second in the series, this publication lists the plant pathogens known to attack foreign tree species growing in the United States. To avoid much repetition, the authors of the scientific names of the pathogens and the common names of the diseases are given in the list of diseases and nowhere else. In the same manner, the authors of scientific tree names and their common names are given only in the host index.

The third publication will list the foreign infectious tree diseases, with some indication of the damage they do and their potential menace to forests of other regions.

More than 3,000 articles and books are included in the bibliography compiled for this entire survey. This bibliography is too large to publish but is available for reference on index cards filed at the Forest Insect and Disease Laboratory, Northeastern Forest Experiment Station, New Haven, Conn.

THE DISEASES

This handbook lists the infectious diseases known to attack foreign forest trees growing in the United States.

The scientific name of each pathogen includes the authority for the name followed by (x), (xx), or (xxx), indicating the class of parasitism of the pathogen. It is believed important to point out this feature as foretelling possible action of the pathogens if, and when, they arrive in new regions. Accordingly, three classes have been set up.

The first (x) class causes disease occasionally and includes semipathogens that normally live saprophytically, but can become pathogenic under adverse conditions for the tree or under especially favorable conditions for the organism.

The second (xx) class includes wound parasites that can attack trees only through wounds that expose living inner tissues. Nearly all decays of living trees and a considerable number of other diseases are of this type. Many wound parasites can live saprophytically.

Class three (xxx) pathogens are aggressive parasites able to attack healthy trees. In fact many pathogens, such as the white pine blister rust fungus, attack the most vigorous and thrifty trees, whereas the suppressed individuals escape.

Fungi are living organisms and exhibit individuality. Moreover, of late years it has been found that many fungus species have numerous races, sometimes varying in pathogenicity. Parasites that are widely and generally distributed in one country may have especially aggressive races that are not yet in other regions. For example, the black stem rust of wheat has been found to have hundreds of races varying in pathogenicity *and to be developing new races.* Similar action is to be expected of tree-inhabiting fungi, such as *Armillaria mellea*

with its worldwide range and recognized varieties. Although this fungus is common in the forests of many countries, its introduction on nursery trees, wood, or in soil from overseas might materially increase the root-rot problem for any tree species that does not occur naturally in the same region from which the specific fungus race was introduced. The same fact is undoubtedly true, though probably to a lesser extent, for other pathogens native to different continents.

Diseases caused by algae and lichens are not included because they are few and relatively unimportant.

Whenever a common name for a disease is known, it is given. Synonyms for scientific fungus names are omitted, the name given being that believed to be generally accepted or most commonly used.

Diseases are segregated into four groups, according to the type of causal agent, and listed alphabetically:

Viruses, by common names.
Bacteria, by Latin names.
Fungi, by Latin names.
Mistletoes, by Latin names.

Each disease is annotated with the available data on its life history, severity, and general distribution. The distribution on each host is given when known; otherwise, only the host is indicated.

Viruses

The writer ranks tree viruses as wound parasites, because they are carried largely by sap-sucking insects and gain entry mostly through insect injuries.

Virus, Mosaic (xx) **fig mosaic**

There are numerous virus mosaic forest tree diseases. They are indicated by the following leaf abnormalities, singly or in combination: yellow mottling, vein etching, ring spot, leaf curling, reduction in size, and abnormal form. Severe attacks may cause death of leaves, branches, and even entire trees. Lack of adequate investigation of the numerous diseases of the mosaic type prevents close determination of their ranges, but they are given on the basis of present knowledge so far as known. Fig mosaic is distributed in the United States and in Italy, Bulgaria, China, and New Zealand.

Ficus carica: California, Georgia, Texas, Virginia.

Virus, Mosaic (xx) **tobacco mosaic**

See general statement under fig mosaic. Causes ring spot and spotted wilt of *Nicotiana.*

Nicotiana glauca: California.

Virus, Mosaic (xx) **Pittosporum mosaic**

See general statement under fig mosaic. Known in California.

Pittosporum daphniphylloides: California.

Virus, Mosaic (xx) **Syringa mosaic**

See general statement under fig mosaic. Causes mosaic and ring spot of *Syringa* leaves in United States and in Bulgaria, Czechoslovakia, and Yugoslavia.

Syringa vulgaris: Michigan, Minnesota.

Virus, in wood (xx) Pierce's vine disease

Causes sudden drying or scalding of part of a leaf while still green, or early yellow discoloration of the leaf margins later turns brown and extends toward the petiole. Death follows in 1 to 5 years. The virus has many different host plants, native and introduced, herbaceous and woody, alfalfa being one of the most susceptible. Many carry masked infections. The disease is known in the United States in California, Texas, and Florida; also in Argentina and Italy.

Acacia longifolia: California.
Baccharis pilularis: California.
Coprosma baueri: California.
Cotoneaster rotundifolia: California.
Cytisus scoparius: California.
Duranta repens: California.
Eugenia paniculata var. *australis:* California.
Hedera helix: California.
Hydrangea paniculata: California.
Lonicera japonica: California.
Parthenocissus tricuspidata: California.
Pittosporum crassifolium: California.
Symphoricarpos albus: California.
Syringa vulgaris.
Vitis vinifera: California.

Virus, Rough bark (xx) tung rough bark

Causes rough bark of tung in the Gulf States.
Aleurites fordii: Mississippi, Louisiana.

Virus, Rough bark (xx) Pittosporum rough bark

Causes rough bark of *Pittosporum.*
Pittosporum tobira: California.

Virus, Witches'-broom (xx) Juglans witches'-broom

Causes witches'-broom on branches of *Juglans.*
Juglans ailantifolia: Georgia.

Virus, Witches'-broom (xx) Melia witches'-broom

Causes witches'-broom on branches of *Melia.*
Melia azedarach: Florida.

Bacteria

Agrobacterium rhizogenes (Riker et al.) Conn (xx) **hairy root**

Causes the formation of numerous small roots on the stems or roots of many shrub and tree fruits. General in the United States, reported in Europe. Damage usually not severe.

Caragana arborescens.
Cotoneaster spp.: Central States.
Elaeagnus angustifolia: Iowa.
Lonicera tatarica: Iowa.
Morus alba.
Spiraea spp.: Iowa.

Agrobacterium tumefaciens (E. F. Sm. & Town.) Conn (xx)
crown gall

Causes rounded to convolute galls on roots or shoots of conifers and broad-leaved trees. The diseased plants are gradually weakened and may be killed. This disease is practically universal in distribution.

Abies cephalonica.
A. firma.
A. holophylla.
Acer pseudoplatanus.
Araucaria bidwillii.
Arbutus unedo.
Camellia japonica.
Celastrus sp.
Corylus avellana: Washington.
Cunninghamia lanceolata.
Cupressus duclouxiana.
C. lusitanica.
C. sempervirens: California.
Elaeagnus angustifolia: Georgia.
Eucalyptus spp.
Euonymus fortunei.
E. japonicus.
Ficus carica: California, Texas.
F. elastica: California, Texas.
Forsythia spp.: Mississippi, New Jersey, Texas.
Hibiscus spp.: Mississippi.
Hippocratea obtusifolia: Florida.
Jasminum spp.: Maryland.
Juglans regia.
Juniperus cedrus.
J. chinensis: Florida.
J. phoenicea.
J. procera.
J. sabina: California, Mississippi.
Kalanchoë daigremontiana.
K. pinnata.
Ligustrum spp.: Texas.
Lonicera japonica: Connecticut.
L. tatarica.
Podocarpus elongatus.
Populus alba.
Pyrus spp.: Maryland.
Salix alba: Connecticut.
S. babylonica.
Sciadopitys verticillata.
Sorbus aucuparia: Connecticut, New Jersey.
Syringa vulgaris: Connecticut.
Taxus baccata: California.
Thuja orientalis.
Thujopsis dolobrata.
Thunbergia grandiflora: Florida.
T. laurifolia: Florida.

Viburnum opulus: Pennsylvania, Washington.
Weigela spp.: Mississippi.
Wisteria spp.: Connecticut, Maryland.

Corynebacterium humiferum Seliskar (xx) **poplar wetwood**

Wetwood of *Populus* spp. has been known in the United States for years. Recently it was found on *P. nigra* var. *italica.* Preliminary investigation revealed a bacterial organism associated with the wetwood. Inoculations in *P. tremuloides* succeeded and the organism was recovered from inoculated trees and considered to be a new species.
Populus nigra var. *italica:* Colorado.

Corynebacterium michiganense (E. F. Sm.) H. L. Jens. (xxx) **Solanaceae bacterial wilt**

Causes vascular wilt of tomato and related plants in every major tomato-growing section of the Americas, Europe, Africa, Australia, and New Zealand. Carried in infected seeds.
Cyphomandra betacea: California.

Corynebacterium poinsettiae Starr & Pirone (xxx) **poinsettia bacteriosis**

Causes longitudinal water-soaked streaks of *Euphorbia* stems and petioles; also spotting of leaves and defoliation. Known in New Jersey, Maryland, New York, and Pennsylvania.
Euphorbia pulcherrima.

Erwinia amylovora (Burr.) Winslow et al. (xxx) **fire blight**

Causes wilt and blight of all parts of pear, apple, and numerous related trees in North America. Reported from Italy, Japan, and New Zealand. Evidently it is native in the United States but has been carried to other continents in spite of warnings of its serious nature in pome fruit orchards.
Photinia villosa: New Jersey.
Pyracantha coccinea.
Pyrus spp.: Illinois, New York, Virginia.
P. pyrifolia: Iowa.
Sorbus aucuparia: New York.
Spiraea spp.
Stranvaesia davidiana: New Jersey.

Erwinia carotovora (L. R. Jones) Holland f. **parthenii** Starr (xx) **guayule root rot**

Causes root rot and resultant wilting of single branches or entire plants. Known only in California and Texas.
Parthenium argentatum: California, Texas.

Erwinia nimipressuralis Carter (xx) **elm wetwood**

Causes wilt, yellowing, and premature shedding of leaves; also exudation of sap, caused by gas pressure, through cracks in the bark, which dries and makes whitish streaks where the liquid runs down. Internally, the wood has brown discolored streaks and even several entire annual rings in heart and sapwood. Affected trees appear not

to die directly from this disease but decline slowly by dieback of twigs and branches. Known only in the United States.

Ulmus procera: Illinois.

U. pumila: Illinois.

Xanthomonas citri (Hasse) Dowson (xxx) **citrus canker**

Causes roughened lesions on all parts of trees above ground. All citrus and close relatives are susceptible. Discovered in Florida about 1910. Since then it apparently has been eradicated from the country. Known in Old World tropics where citrus is grown.

Feronia limonia: Florida.

Xanthomonas corylina (P. W. Miller et al.) Starr & Burkh. (xxx) **filbert blight**

Causes lesions of leaves, shoots, and nuts, which result in dieback of twigs, branches, and even of the main stem at ground level.

Corylus avellana: Oregon, Washington.

C. maxima: Oregon, Washington.

Xanthomonas hederae (Arn.) Dowson (xxx) **Hedera leaf spot**

Causes water-soaked small leaf spots that later turn dark and dry. Orange-red exudate may ooze out on infected spots. Petioles may be girdled, and leaves often turn yellow and fall. Distributed in Germany and France, and in eastern United States.

Hedera helix: New York to Virginia, west to Missouri.

Xanthomonas juglandis (Pierce) Dowson (xxx) **Juglans blight**

Causes black dead spots on young nuts, green shoots, and leaves of *Juglans* spp. Distributed in the Pacific Coast States, British Columbia, eastern United States, and West Indies. Reported in Chile, Europe, New Zealand, Tasmania, Australia, and South Africa.

Juglans ailantifolia var. *cordiformis:* Georgia.

J. regia: British Columbia to California, and eastern United States.

Xanthomonas maculifolium-gardeniae (Ark & Barrett) Elliott (xxx) **Gardenia bacteriosis**

Causes small leaf spots on *Gardenia* leaves with pale yellow centers, later turning reddish brown with a yellow halo.

Gardenia jasminoides: California.

Xanthomonas malvacearum (E. F. Sm.) Dowson (xxx) **cotton bacteriosis**

Causes angular leaf spot and boll rot of *Gossypium* and related plants in the cotton-growing regions of the world.

Gossypium arboreum: Oklahoma.

G. barbadense: Oklahoma.

Xanthomonas ricinicola (Elliott) Dowson (xxx) **castor bean bacteriosis**

Causes numerous brown, water-soaked leaf spots of *Ricinus* in Korea, Japan, India, Russia, Italian Somaliland, and Uganda. It is apparently seedborne.

Ricinus communis: Oklahoma, Texas, Maryland.

Fungi

Fungi are the causes of most infectious diseases of forest trees. They attack all parts of trees, from roots to leaves, and cause root rots, stem rots, cankers, hypertrophies, witches'-brooms, twig and branch dieback, systemic wilt, and foliage diseases, such as spots, blotches, galls, and anthracnose. The fungi causing these various kinds of disease are very numerous, especially those for the rots, diebacks, and leaf diseases.

Root rots kill the fine feeding rootlets, cause starvation of large trees and outright death of seedlings and small trees; they also kill large roots and predispose trees to windfall. Stem or trunk rots seldom kill trees, but they do weaken them at stump height and make them liable to wind breakage. The principal loss from stem or trunk rots is due to decay of the heartwood of living trees. Dieback of twigs and branches is usually serious only where the environmental conditions are unfavorable for the tree or are very favorable for the pathogen.

Leaf spots are legion in number and especially prevalent on broad-leaved trees. Usually they are not serious, but occasional destructive outbreaks occur. Nursery seedlings and young natural reproduction are liable to such damage. Premature defoliation may occur in severe attacks, and sometimes the fungus may spread into the young twigs and cause dieback.

Actinopelte dryina (Sacc.) Hoehn. (xxx) **hardwoods leaf spot**

Causes small brown spots on leaves of oaks and other hardwoods. Occurs in the United States and Europe. Causes slight damage.

Castanea sativa: Mississippi, New Jersey.
Eucalyptus globulus: Louisiana.

Alternaria brassicae (Berk.) Sacc. (xxx) **leaf and stem spot**

Associated with spot of leaves and young stems, mostly of herbaceous plants but occasionally of shrubs and trees. Known in the United States and Europe.

Cajanus cajan: Texas.
Ricinus communis: New York.

Alternaria compacta (Cke.) McClellan (xxx) **castor bean seedling blight**

Causes damping-off of germinating castor bean seedlings, stem rot after emergence from the soil, and spotting of leaves of older plants. The disease is known in the United States and Europe. A number of like diseases of castor bean are reported wherever the plant is grown. Lack of comparative studies has prevented learning whether some of these diseases are identical with this one. Seeds become infected and carry the disease.

Ricinus communis: Maryland.

Alternaria forsythiae Harter (xxx) **Forsythia leaf spot**

Occurs on gray spots 2 to 10 mm. across with concentric border zones. In North America only.

Forsythia suspensa: District of Columbia.

Alternaria longipes (Ell. & Ev.) Mason (x) **Nicotiana leaf spot**

Causes brown spot of leaves of *Nicotiana* spp.
Nicotiana glauca: Texas.

Alternaria ricini (Yoshii) Hansford (xxx) **castor bean blight**

Causes seedling blight, capsule wilt, and leaf spot with defoliation. Generally present in the United States and reported in Japan.
Ricinus communis: Maryland.

Alternaria tenuis Nees ex Cda. (x) **broadleaf leaf spot**

Associated with leaf spots of broad-leaved species in the United States and Europe.
Camellia spp.
Hibiscus spp.: Indiana, New Jersey, Pennsylvania.
Rhododendron spp. (cult.): South Carolina.

Amerosporium trichellum (Fr.) Lind (xxx) **Hedera leaf spot**

Occurs on small circular spots on ivy leaves in North America and Europe.
Hedera helix.

Apioporthe anomala (Pk.) Hoehn. (x) **Corylus canker**

Causes cankers of stems and blight of branches of *Corylus* sp. in the United States.
Corylus avellana: Connecticut, Delaware, Massachusetts, Illinois.

Armillaria mellea (Vahl ex Fr.) Quél. (x) **shoestring root rot**

In early years the general opinion was that this disease was caused by a virulent parasite able to attack vigorous trees and kill them in a short time. Later investigations have shown that competition, site, or climatic conditions adverse to the normal growth of the trees commonly have preceded attacks of the fungus. The fungus is present in the soil of every mature or middle-aged stand of trees, ready to take advantage of any weakening of the trees by drought, defoliation, or unfavorable site. To lessen their susceptibility, the forester must keep his trees in as vigorous condition as possible.

Armillaria mellea varies much in appearance and aggressiveness with different forest trees. Numerous varieties have been described. An investigator of long experience in the eastern Tropics stated some years ago that the fungus of that region known as *A. mella* is a different species, i. e., *A. fuscipes* Petch. Later he decided that his new species was really a variant of *A. mellea.* It is likely that truly parasitic strains exist within its tremendous worldwide range, since many fungi are known to have races varying much in parasitic ability. (See also *Clitocybe tabescens.*)

Acer platanoides.
Ailanthus altissima: New York.
Alsophila australis: California.
Annona cherimola: California.
Arundo donax: Maryland.
Buxus sempervirens: New Jersey.
Casuarina spp.: California.

Chamaecyparis obtusa.
Cinnamomum camphora.
Corylus avellana: Oregon, Washington.
Cotoneaster spp.: California.
Crassula argentea: California.
Deutzia scabra.
Eucalyptus spp.
Fagus sylvatica.
Ficus carica: California.
Jacaranda acutifolia: California.
Juglans regia.
Lavandula officinalis: Texas.
Ligustrum spp.
Lonicera morrowii: New Jersey.
Morus alba.
Osmanthus fragrans: California.
Persea americana: California.
Phoenix canariensis: California.
Pieris japonica: New Jersey.
Prunus laurocerasus.
Pyracantha coccinea: California.
Quercus suber: California.
Rhododendron spp.
Schinus molle: California, Texas.
S. terebinthifolia: Texas.
Syringa vulgaris: California, Mississippi.
Tecomaria capensis: California.
Thuja orientalis: Mississippi, Texas.
Viburnum tinus.

Ascochyta caricae Rab. (xxx) **fig leaf spot**

Occurs on reddish leaf spots of *Ficus* in the United States, Austria, France, and Istria.

Ficus carica: Oregon.

Ascochyta cycadina Scalia (xxx) **Cycas blight**

Causes yellow to brown leaf spots with purple margins. Known in the United States and Europe. Apparently damaging when abundant.

Cycas revoluta: Missouri, Texas.

Ascochyta hydrangeae Arn. (xxx) **Hydrangea leaf spot**

Causes greenish-gray spots on leaves and stems of *Hydrangea* in North America and France. May involve the entire leaf area.

Hydrangea macrophylla: New Jersey.
H. paniculata: Alaska, New Jersey.

Ascochyta juglandis Bolts. (xxx) **Juglans leaf spot**

Occurs on rounded grayish-brown leaf spots with dark margins on *Juglans* spp. In the United States and Europe.

Juglans regia: Oregon, Washington.

Ascochyta paulowniae Sacc. & Brun. (xxx) **Paulownia leaf spot**

Occurs on brownish-gray leaf spots on *Paulownia* leaves in the United States.

Paulownia tomentosa: Maryland.

Ascochyta piniperda Lindau (xxx) **conifer blight**

Causes blight and dieback of conifer branches and seedlings. Apparently native in Europe.

Picea abies: North Carolina.

Ascochyta syringae Bres. (xxx) **lilac leaf spot**

Occurs on leaf spots of *Syringa* spp. in the United States and Europe.

Syringa vulgaris: Oregon, Wisconsin.

Asperisporium caricae (Speg.) Maub. (xx) **papaya leaf spot**

Associated with leaf spot of *Carica papaya* in southern United States, Jamaica, and South America.

Carica papaya: Florida, Texas.

Asterina caricarum Rehm (x) **papaya black mildew**

Causes black mildew of *Carica* leaves in Florida and Brazil.

Carica papaya: Florida.

Asteroma capreae Desm. (x) **willow leaf spot**

Causes large, irregular, brownish-black leaf spot of *Salix* in the United States, France, and Germany.

Salix alba: Connecticut.

Atropellis tingens Lohman & Cash (xxx) **pine twig canker**

Causes canker and dieback of twigs of *Pinus* from the Atlantic Coast west to Ohio and Arkansas. Not known in Europe.

Pinus densiflora: Virginia.
P. nigra: Virginia.
P. sylvestris: Ohio.

Bifusella striiformis Darker (x) **hard pine leaf cast**

Causes leaf cast of hard pines.

Pinus pinaster: California.

Botryosphaeria ribis (Tode ex Fr.) Gross. & Dug. (x) **broadleaf dieback**

Causes canker and dieback of many broad-leaved trees. Damage usually is not pronounced in any single area. This disease is distributed widely in North America, Argentina, and Africa.

Acer pseudoplatanus: Nebraska.
Albizia julibrissin: Georgia.
Aleurites fordii: Georgia, Louisiana.
Camellia japonica: Mississippi.
Castanea crenata: Mississippi, Virginia.
Ceratonia siliqua: California.
Cercis chinensis.

Cinnamomum camphora: Alabama.
Eucalyptus spp.: California.
Euphorbia pulcherrima: Texas.
Ficus carica: Florida, Texas.
Firmiana platanifolia: Louisiana.
Forsythia suspensa: Maryland.
Hibiscus spp.: Georgia.
Laburnum anagyroides: Maryland.
Lagerstroemia indica: Alabama.
Ligustrum spp.: Alabama, Georgia.
Melia azedarach: Alabama, Florida, Georgia, South Carolina.
Morus alba: Georgia, New Jersey.
Picea abies: Illinois.
Pyracantha coccinea: Mississippi.
Ricinus communis: Florida.
Salix alba: Georgia, Missouri.
S. babylonica: Maryland.
Syringa vulgaris: Ohio.
Taxus spp.: Pennsylvania.
Tilia cordata.
T. ×*europaea.*
T. platyphyllos.
Ulmus pumila: Arkansas.

Botryosphaeria ribis Gross. & Dug. var. **chromogena** Shear, N. E. Stevens & M. S. Wilcox (x) **dieback**

Like the preceding but credited with more aggressive parasitism.
Ailanthus altissima: Georgia, Maryland.
Caesalpinia gilliesii: Florida, Texas.
Castanea crenata.
C. mollissima.
Cercis chinensis: Maryland, New Jersey.
Persea americana: California.
Psidium guajava: Florida.

Botryosphaeria tamaricis (Cke.) Th. & Syd. (xx) **tamarisk dieback**

Causes dieback of tamarisk and related plants in Argentina and India; reported in the United States in South Carolina.
Tamarix gallica: South Carolina.

Botryotinia ricini (Godfrey) Whet. (xxx) **castor bean inflorescence blight**

Causes blight of the inflorescence of *Ricinus* in the Gulf States of the United States, in India and Cuba.
Ricinus communis: Gulf States.

Botrytis cinerea Pers. ex Fr. (xx) **gray mold**

Causes decay of leaves, inflorescence, young stems, and roots of all kinds of plants. High air moisture greatly favors attack. There are truly parasitic strains that inflict considerable damage, but usually it is saprophytic or weakly parasitic. Occurs wherever plants grow.
Berberis vulgaris: California.
Camellia sp.

C. japonica.
Caragana arborescens: Massachusetts.
Eucalyptus spp.
Euonymus alatus: New Jersey.
Euphorbia pulcherrima.
Feijoa sellowiana: California.
Ficus carica.
Fuchsia spp.: West Virginia, Alaska.
Heliotropium arborescens.
Hydrangea macrophylla.
H. paniculata.
Lonicera tatarica: Connecticut, Alaska.
Parthenium argentatum: California.
Picea abies: New Jersey, North Carolina.
Pinus halepensis: Oregon.
Punica granatum.
Rhododendron spp.
Syringa vulgaris: Northeastern States, Pacific Northwest.
Thuja orientalis: New Jersey.
Viburnum opulus: Massachusetts, Washington.
Vinca minor: Connecticut, Washington.

Botrytis elliptica (Berk.) Cke. (x) **Stephanotis flower blight**

Causes flower blight of *Stephanotis.*
Stephanotis floribunda: California.

Boydia insculpta (Oud.) Grove (x) **holly dieback**

Associated with canker and dieback of *Ilex* spp., in Great Britain and in the United States.
Ilex aquifolium: Oregon, Pacific Northwest.

Catenophora pruni Luttrell (xx) **cherry twig blight**

Causes twig blight of flowering cherry in North Carolina.
Prunus serrulata: North Carolina.

Cenangium abietis (Pers.) Duby (x) **pine dieback**

Causes dieback of twigs of conifers, following unfavorable site conditions or insect injuries. Widespread in North America and Europe and reported in Japan.
Pinus nigra: New York.
P. sylvestris: New York.

Cephalosporium diospyri Crandall (xx) **persimmon wilt**

Causes sudden wilt of leaves in the top of trees of *Diospyros*, followed shortly by general wilting, defoliation, and death of the entire tree. Brownish streaks appear in the wood of the outer annual rings from the roots to the smallest branches, and in the older parts of the tree in 3 to 10 annual rings or more. In the fall, orange-pink masses of spores form beneath the dead bark. The disease has been found from North Carolina southward and west to eastern Texas. The native persimmons *D. virginiana* L. and *D. texana* Scheele are sus-

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ceptible, as is *D. ebenaster* Retz of the East Indies. *D. discolor* Willd., *D. rosei* Standley, and *D. montana* Roxb. are immune; *D. lotus* L. and *D. kaki* L. are resistant in test inoculations.

Susceptibility of native species leads to suspicion that the disease was introduced from another continent, but there is no evidence as to where it originated. The pathogen obtains entry in wounds. Introduction of this parasite into disease-free, persimmon-growing areas can become a serious matter.

Diospyros ebenaster: Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, Oklahoma, North Carolina, South Carolina, Tennessee, Texas.

D. kaki: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Texas.

D. lotus: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Texas.

Cephalosporium fici Tims & Olive (xxx) **fig zonate leaf spot**

Causes conspicuous concentrical zones of light and dark brown leaf spots 1 to 6 cm. across. Beneath, small cottony white tufts of mycelium develop. Known only in Louisiana.

Ficus carica: Louisiana.

Ceratocystis fagacearum (Bretz) Hunt (xx) **oak wilt**

This pathogen was formerly *Endoconidiophora fagacearum.* It causes wilting of a single branch or many branches of diseased trees, suddenly or gradually until the tree dies. All species of oak and related species of the family Fagaceae tested have proved to be susceptible to inoculations in wounds (38 species and varieties in 4 genera). Foreign species are readily susceptible. The fungus may remain viable in logs or lumber for an indeterminate period of time, at least until the moisture content is reduced to less than 20 percent. A real danger to oak and related trees of other continents. Known only in the United States.

Castanea mollissima: Missouri.
C. sativa.
Castanopsis kawakamii.
Lithocarpus glaber.
Quercus acuta.
Q. acutissima.
Q. aliena var. *acuteserrata.*
Q. castaneaefolia.
Q. cerris.
Q. dentata.
Q. glandulifera.
Q. glauca.
Q. haas.
Q. ilex.
Q. longinux.
Q. macrolepis.
Q. myrsinaefolia.
Q. robur.
Q. suber.
Q. variabilis.

Ceratocystis fimbriata Ell. & Halst. f. **platani** (Walter) Hunt (xx)
Platanus canker stain

This pathogen was formerly *Endoconidiophora fimbriata.* It causes blackened, elongate cankers on the trunks of London plane trees. The cankers are perennial and increase by annual zones ½ to 2 inches wide. The sapwood under the dead bark of cankers is stained radially bluish black or reddish brown. This form of the fungus is morphologically like the species that is widely distributed in North America, and especially on *Hevea* rubber trees in the Tropics. It seems likely that this is a native fungus and is to be feared by foreign countries as a serious threat to London plane. It is carried on tree surgeons' tools, which must be sterilized for every new tree operated upon in an infection area.

Platanus ×*acerifolia:* Delaware, District of Columbia, Kentucky, Maryland, Mississippi, New Jersey, North Carolina, Pennsylvania, Tennessee, Virginia, West Virginia.

Ceratocystis ulmi (Buism.) C. Moreau (xxx)
Ceratocystis disease of elm

This pathogen, formerly *Ceratostomella ulmi*, was first noted in Europe in 1919 in The Netherlands and practically simultaneously in Belgium and France. In a few years it was reported as far east as Russia and the Balkans. This disease came to the United States from Europe in the 1930's in infected elm burl logs imported for veneer manufacture. The ports of entry were New York, Baltimore, and Norfolk. Resistance of some Asiatic elms has led to the supposition that the disease came from Asia in World War I. It has spread in eastern North America from Tennessee and Virginia, northward to Michigan, Vermont, Quebec, and Ontario. There is an isolated outbreak in Colorado.

Symptoms of the disease are yellowing or wilting of leaves on one or more branches; others are then attacked until the tree is dead. The sapwood in cross section shows brown spots or annual rings. Other diseases cause similar symptoms. This makes it necessary to culture the fungus and identify it to be certain which disease is in the suspected tree. Selecting resistant trees for propagation and crossbreeding resistant elm species with our American elm promise means of control.

Ulmus carpinifolia.
U. japonica.
U. laevis.
U. procera: Connecticut, New York.
U. pumila: New York.
Zelkova sp.

Ceratostomella radicicola Bliss (x) **date palm wilt**

Attacks roots and trunk, causing wilt and sudden death of the tree. Known only in California.

Phoenix dactylifera: California.

Cercospora abelmoschi Ell. & Ev. (xxx) **Hibiscus leaf spot**

Occurs on leaf spots, indistinct. On numerous species of *Hibiscus*. Apparently as widely spread as the hosts in North America and the West Indies, Africa, Formosa, and Japan.

Hibiscus rosa-sinensis: Alabama, Oklahoma, Texas.

Cercospora adusta Heald & Wolf (xxx) **privet leaf spot**

Causes large, circular, brown leaf spots with wide, pale brown margins. Known only in North America.

Ligustrum spp.: Delaware to Alabama, Texas.

L. ovalifolium: Texas.

Cercospora broussonetia Chupp & Linder (xxx) **Broussonetia leaf spot**

Causes a dark, downy, olivaceous indistinct leaf spot. Reported in Florida and in China.

Broussonetia papyrifera: Florida.

Cercospora callicarpae Cke. (xxx) **Callicarpa leaf spot**

Occurs on indistinct, irregular brown leaf spots fading into the surrounding green area of the leaf. In southern United States and in Japan and Formosa.

Callicarpa dichotoma: South Carolina, Florida to Texas.

Cercospora chionea Ell. & Kell. (xxx) **redbud leaf spot**

Causes tan to dark reddish brown leaf spots of *Cercis*, 5 to 15 mm. across. In North America from Kansas and Oklahoma eastward to New York. Known also in China and Japan.

Cercis chinensis: Indiana.

Cercospora cinchonae Ell. & Ev. (xxx) **Cinchona leaf spot**

Causes circular, dark, reddish brown leaf spots. Known in the Gulf States, in Uganda, and the Belgian Congo.

Cinchona officinalis: Louisiana.

Cercospora destructiva Rav. (xxx) **Euonymus leaf spot**

Causes large, gray to rusty brown leaf spots in South Carolina, Mississippi, China, and Japan.

Euonymus japonicus: South Carolina.

Cercospora deutziae Ell. & Ev. (xxx) **Deutzia leaf spot**

Causes minute leaf spot, white with raised brown margins. From Iowa to New York and Delaware; also in Japan.

Deutzia gracilis: Delaware.

Cercospora elaeagni Heald & Wolf (xxx) **Elaeagnus leaf spot**

Occurs on circular leaf spots, 0.5 to 2.5 mm. across, white with dark brown margin. Distributed through the Gulf States from Texas to Florida.

Elaeagnus angustifolia: Texas.

Cercospora fici Heald & Wolf (xxx) **fig leaf spot**

Occurs on irregular leaf spot of *Ficus* spp., 1 to 8 mm. across, dingy gray with brown margin. Distribution is uncertain because of confusion of species.

Ficus carica: North Carolina to Florida and Texas.

Cercospora ficina Tharp (xxx) **fig leaf spot**

Occurs on leaf spots, irregular, small and rusty brown. On *Ficus urceolaris* in Uganda.

Ficus carica: Texas.

Cercospora glandulosa Ell. & Kell. (xxx) **Ailanthus leaf spot**

Occurs on a small, rounded grayish brown leaf spot of *Ailanthus.* Distributed from Nebraska southward, and in South America and China.

Ailanthus altissima: Texas.

Cercospora handelii Bub. (xxx) **Rhododendron leaf spot**

Causes a large leaf spot up to 10 mm. across, gray to dark reddish brown with orange to black margin. Widely distributed in the United States, Europe, and Japan.

Rhododendron spp.

Cercospora henningsii Allesch. (xxx) **Manihot leaf rust**

Causes subcircular, pale brown to grayish spots, 3 to 12 mm. across, on leaves of *Manihot* spp. Common wherever *M. utilissima* is grown intensively. Known in the United States in Florida and Texas, and in Central America, West Indies, South America, Africa, Philippines, Formosa, and Japan.

Manihot esculenta: Florida, Texas.

Cercospora hydrangeae Ell. & Ev. (xxx) **Hydrangea leaf spot**

Occurs on circular to angular, brown to gray leaf spots with dark reddish brown or almost black margin, extending over much of the leaf surface. Distributed north to Illinois and south to Argentina; also in Formosa and Japan.

Hydrangea macrophylla: Oklahoma.

H. paniculata: Virginia to Alabama and Texas.

Cercospora kolkwitziae Ray (xxx) **Kolkwitzia leaf spot**

Occurs on irregular leaf spots, 0.5 to 12 mm. long, immarginate, reddish brown with small white flecks. Known only in the United States.

Kolkwitzia amabilis: Alabama, Oklahoma.

Cercospora laburni Ray (xxx) **Laburnum leaf spot**

Causes leaf spot 1 to 8 mm., gray with narrow dark reddish brown margin. Known only in Oklahoma.

Laburnum anagyroides: Oklahoma.

Cercospora ligustri Roum. (xxx) **Ligustrum leaf spot**

Occurs on small rounded, pale tan to grayish leaf spots with purplish to black margins. Distributed in the United States in Texas and Mississippi; is also known in France and Japan.

Ligustrum spp.: Gulf States.

Cercospora lilacis (Desm.) Sacc. (xxx) **lilac leaf spot**

Occurs on elongate, dull brown to gray leaf spots, often with ferruginous line margins, 5 to 12 mm. long. Distributed in southern United States and reported once from Minnesota; in Europe reported from Belgium, Germany, and central Russia; also in northern South America and Bermuda.

Syringa ×persica: Mississippi.
S. vulgaris: Texas.

Cercospora lonicerae Chupp (xxx) **Lonicera leaf rust**

Causes irregular brown leaf spots. Known in the United States and Bermuda.

Lonicera japonica: Mississippi.

Cercospora lythracearum Heald & Wolf (xxx) **Lagerstroemia leaf spot**

Causes circular, pale brown to gray or dark olivaceous leaf spots, 3 to 10 mm. across. Known in Trinidad, Puerto Rico, Formosa, Philippines, India, and Uganda.

Lagerstroemia indica: Texas.

Cercospora macromaculans Heald & Wolf (xxx) **lilac leaf spot**

Occurs on brown leaf spots 5 to 12 mm. across and often zonate. Known only in North America. Causes much defoliation.

Syringa vulgaris: Texas, Wisconsin.

Cercospora malachrae Heald & Wolf (xxx) **Malachra leaf spot**

Occurs on white to yellowish gray, small leaf spots with wide purplish margins. Known in Venezuela, Brazil, Trinidad, San Domingo, and Puerto Rico.

Malachra capitata: Texas.

Cercospora malayensis F. L. Stevens & Solheim (xxx) **Hibiscus leaf spot**

Causes leaf spots circular to irregular, 3 to 30 mm. long, tan to dingy gray with a purple or red border. Almost coextensive with *Hibiscus* in North and South America, South Africa, Japan, Formosa, and the Philippines.

Hibiscus syriacus: Georgia.

Cercospora malloti Ell. & Ev. (xxx) **Mallotus leaf spot**

Occurs on circular to angular, 1 to 4 mm. in diameter, white to gray leaf spots with a dark line border. Known in Japan and Formosa.

Mallotus japonicus: Mississippi.

Cercospora meliae Ell. & Ev. (xxx) **Melia leaf spot**

Causes leaf spots 0.5 to 2.5 mm. across, centers white, with narrow dark reddish brown line border. Known in Formosa, China, and India.

Melia azedarach: Gulf States.

Cercospora microsora Sacc. (xxx) **Tilia leaf spot**

Causes dark oval spots on twigs and variable spots on leaves of different species of *Tilia*. Known from Wisconsin and Kansas to New York and Virginia; in Europe from Italy to northern Germany, east to Russia, in Scotland, New South Wales, Colombia, Caucasus, and Central Asia.

Tilia cordata: New Jersey, Pennsylvania, Virginia.

Cercospora moricola Cke. (xxx) **mulberry leaf spot**

Causes leaf spot 1 to 8 mm. across, gray to tan center, dark purple to black margin. In the United States from Mississippi and Wisconsin eastward; also in England, Italian Somaliland, and Brazil.

Morus alba.

Cercospora nandinae Nagatoma (xxx) **Nandina leaf spot**

Causes upper leaf surface to become blotched with red, with some centers almost black. Lower leaf surface has scant, effuse, sooty, or olivaceous mycelial layer. Known in South Carolina, Alabama, and Japan. Probably native in Japan or China.

Nandina domestica: South Carolina, Alabama.

Cercospora nigricans Cke. (xxx) **Cassia leaf spot**

Occurs on grayish brown leaf spot of *Cassia* sp. in East Africa and Japan; also in eastern United States and Puerto Rico.

Cassia acutifolia: Mississippi.

Cercospora pistaciae Chupp (xxx) **Pistacia leaf spot**

Occurs on leaf spots, 0.5 to 3 mm., grayish brown to brown with a very narrow dark line border. Known only in Texas.

Pistacia vera: Texas.

Cercospora pittospori Plakidas (xxx) **Pittosporum leaf spot**

Causes angular, yellow to dull brown leaf spots 1 to 5 mm. across. Known in Japan and in the Gulf States.

Pittosporum tobira: Gulf States.

Cercospora populina Ell. & Ev. (xxx) **poplar leaf spot**

Causes brown to grayish-brown poplar leaf spots 3 to 7 mm. across. Reported in the United States and Japan.

Populus alba: Alabama, Louisiana, Missouri.

Cercospora psidii Rangel (xxx) **guava leaf spot**

Causes guava leaf spots 1 to 4 mm. across, brown with purple border. Known in Brazil and in Florida.

Psidium guajava: Florida.

Cercospora pulcherrimae Tharp (xxx) **poinsettia leaf spot**

Causes poinsettia leaf spots, rounded, 1 to 4 mm. across, tan to gray with dark reddish brown border. Distributed in the United States, Brazil, Jamaica, and Uganda.

Euphorbia pulcherrima: Missouri, Oklahoma, Texas, Wisconsin.

Cercospora repens Ell. & Ev. (xxx) **oleander leaf spot**

Associated with large leaf spots, reddish brown to dark brown, on oleander and other woody-stemmed plants. Known in Louisiana only.

Nerium oleander: Louisiana.

Trachelospermum jasminoides: Louisiana.

Cercospora rhamni Fckl. (xxx) **buckthorn leaf spot**

Causes rounded or emarginate leaf spots of *Rhamnus*, 2 to 10 mm. long, with brown indefinite border. Distributed in Europe and eastern North America.

Rhamnus cathartica: Illinois, New Jersey, New York, Wisconsin, and Ontario.

Cercospora rhoina Cke. & Ell. (xxx) **sumac leaf spot**

Causes reddish-brown to black leaf spots, 1 to 6 mm. across, on *Rhus* and related trees. Distributed in eastern North America, west to Kansas and Wisconsin, south to Mississippi.

Cotinus coggygria.

Cercospora ricinella Sacc. & Berl. (xxx) **castor bean leaf spot**

Causes circular leaf spots, 0.5 to 12 mm. in diameter, centers white with a dark border, or brown or grayish blotches on *Ricinus*. Distributed in the United States, Argentina, Australia, and West Indies.

Ricinus communis: Missouri and farther south.

Cercospora salicina Ell. & Ev. (xxx) **willow leaf spot**

Causes numerous dark reddish-brown leaf spots, 0.5 to 5 mm. in diameter, sometimes with reddish to purplish outer zone. Distributed from Argentina to Manitoba, and in Formosa.

Salix alba: Louisiana.

S. babylonica: Maryland.

Cercospora salviicola Tharp (xxx) **Salvia leaf spot**

Causes rounded to angular leaf spots, 0.5 to 5 mm. across, gray with dark purple border. Distributed in North America and Guatemala.

Salvia officinalis: Oklahoma, Texas, West Virginia.

Cercospora stillingiae Ell. & Ev. (xxx) **Sapium leaf spot**

Occurs on circular to irregular leaf spots of *Sapium*, 2 to 6 mm. across, dark brown. Distributed in China and Louisiana. Probably native in Asia and has accompanied its host to America.

Sapium sebiferum: Louisiana.

Cercospora subsessilis Syd. (xxx) **Melia leaf spot**

Causes round to angular leaf spots on *Melia* and *Swietenia*, 2 to 5 mm. across, sometimes zonate, gray, tan or pale brown. Distributed in the Gulf States; also in Ceylon, China, India, Japan, Philippines, Puerto Rico, and San Domingo.

Melia azedarach: Mississippi, Texas.

Cercospora thujina Plakidas (xxx) **Thuja leaf spot**

Causes necrosis of leaves and stems. Proved pathogenic without wounds. A nursery in Tennessee lost more than 30,000 plants of *Thuja orientalis* because of an outbreak of this leaf spot in 1952. Chupp (Monograph of the genus Cercospora, p. 440, 1953) says it is not a Cercospora but a Heterosporium. Distributed in Arkansas, Tennessee, Mississippi, Louisiana, and Texas.

Cupressus sempervirens: Louisiana.
Thuja orientalis: Louisiana, Tennessee.

Cercospora tinea Sacc. (xxx) **Viburnum leaf spot**

Occurs on angular spots, 4 to 7 mm. across, dark brown to dingy gray, on leaves of *Viburnum*. Distributed in Portugal and Italy.

Viburnum plicatum: Louisiana.

Cercospora varia Pk. (xxx) **Viburnum leaf spot**

Causes round spots, 2 to 4 mm. across, reddish brown, usually with a narrow black line margin, on leaves of *Viburnum* spp. Distributed from Ottawa and Manitoba, southward to West Virginia and Kansas.

Viburnum carlesii: New York.
V. lantana: Illinois.
V. opulus: Oklahoma.

Cercospora viburnicola Ray (xxx) **Viburnum leaf spot**

Causes irregular spots, reddish brown to grayish brown, on leaves of *Viburnum*. Known only in Oklahoma.

Viburnum opulus: Oklahoma.

Cercospora viticis Ell. & Ev. (xxx) **Vitex leaf spot**

Occurs on irregular leaf spots of *Vitex*, 2 to 5 mm. across, dull brown to dingy gray, sometimes with a dark line margin. Distributed in the Gulf States, China, Formosa, and perhaps India.

Vitex agnus-castus: Louisiana, Oklahoma, Texas.

Cercospora weberi Chupp (xxx) **Vitex leaf spot**

Causes round to irregular leaf spots of *Vitex*, 2 to 12 mm. across, grayish brown to dingy gray, sometimes with a dark line border. Known only in Florida.

Vitex agnus-castus: Florida.

Cercosporella mori Pk. (xxx) **Moraceae leaf spot**

Causes irregular spots, 1 to 8 mm. across, brown with a darker border, on leaves of *Morus* and *Broussonetia*. Known only in the United States.

Broussonetia papyrifera: North Carolina, Texas.
Morus alba.

Chalaropsis thielavioides Peyronel (x) **elm root rot**

Nursery stock and young plantings of elms in the Middle West have been troubled by damping-off and dying of plants caused by attacks of *Chalaropsis thielavioides*, which lives saprophytically in infected soil

for an indefinite time. It apparently is a weak parasite. Outside North America it is reported from Italy.

Ulmus parvifolia.
U. pumila.

Chrysomyxa ledi (Alb. & Schw.) d By. var. **rhododendri** (DC.) Savile (xxx) **Rhododendron-spruce needle rust**

Heteroecious on *Picea* spp. leaves in one stage and on rhododendron leaves and young shoots in the other. It overwinters in spruce needles infected in the fall, fruits the next spring, and infects rhododendron leaves and shoots. There it fruits promptly and infects the current year's needles on spruce. Apparently it can overwinter in the rhododendron and persist where spruces are lacking. Heavily diseased needles are shed prematurely and damage may result.

It occurs in alpine regions of Europe, Siberia, China, and Japan, in both stages, and is reported from Canada on *Rhododendron lapponicum* (L.) Wahl. from a single locality in Mackenzie. On *Picea* spp. it is believed to occur in mixture with one or more similar rusts and is reported from Prince Edward Island to British Columbia and in Alaska. It is known in Washington State on cultivated rhododendrons, where it is believed to have been introduced from Europe.

Rhododendron spp. (cult.): Washington.
R. lapponicum: Canada.

Chrysomyxa pyrolae (DC.) Rostr. (xxx) **Pyrola-spruce cone rust**

Heteroecious on spruce cones and the herbaceous *Pyrola* spp. It overwinters on the basal rosette leaves of *Pyrola*, infecting the young spruce cones as they develop. Widely distributed in North America practically everywhere that there are extensive spruce stands; also in Europe, Siberia, Japan, and China.

Picea abies: Massachusetts.

Ciboria carunculoides (Siegler & Jenkins) Whet. (xxx) **mulberry popcorn disease**

Causes hypertrophy of separate drupelets of the fruits. Sclerotia form in the swollen drupelets, overwinter in the fallen fruits, and the next spring form the spore-bearing cups to infect the newly formed blossoms. Distributed in southern United States. Considered distinct from *Ciboria shiraiana* (Hennings) Whet. of eastern Asia, also on *Morus* spp.

Morus alba.

Clitocybe tabescens (Scop. ex Fr.) Bres. (x) **Clitocybe root rot**

Clitocybe tabescens greatly resembles the shoestring fungus (*Armillaria mellea*) but has no ring on the upper part of the stem and forms no shoestrings. Its young mycelial fans are perforate and are less fan shaped at the advancing margins. Root rot diseases caused by the two fungi are so similar that they cannot be distinguished with certainty without fruiting bodies or culture studies. Distributed in North America in Arkansas, Florida, Louisiana, Missouri, Oklahoma, and Oregon; in Europe, in Great Britain, France, and Italy; also in

Madagascar and China. It should be excluded from uninfected regions.

Acalypha wilkesiana: Florida.
Aleurites fordii: Florida, Louisiana.
Annona cherimola: Florida.
Bauhinia purpurea: Florida.
Callitris robusta: Florida.
Cassia nodosa: Florida.
Casuarina cunninghamiana: Florida.
C. equisetifolia: Florida.
C. glauca: Florida.
C. lepidophloia: Florida.
C. montana: Florida.
C. stricta: Florida.
Cecropia palmata: Florida.
Cinnamomum camphora: Florida.
Cotoneaster spp.: Florida.
Cupressus sempervirens: Florida.
Delonix regia: Florida.
Eriobotrya japonica: Florida.
Eucalyptus robusta: Florida.
Eugenia uniflora: Florida.
Euphorbia pulcherrima: Florida.
Ficus elastica: Florida.
Hibiscus rosa-sinensis: Florida.
Ixora sp.: Florida.
Jasminum spp.: Florida.
Jatropha curcas: Florida.
Lagerstroemia indica: Florida.
Ligustrum spp.: Arkansas.
L. amurense: Florida.
Malvaviscus arboreus: Florida.
M. arboreus var. *penduliflorus:* Florida.
Nerium oleander: Florida.
Parkinsonia spp.: Florida.
Persea americana: Florida.
Phoenix canariensis: Florida.
Pithecellobium dulce: Florida.
Psidium cattleianum: Florida.
P. guajava: Florida.
Punica granatum: Florida.
Pyrus pyrifolia: Florida.
Rhododendron indicum: Florida.
Ricinus communis: Florida.
Sanchezia nobilis: Florida.
Sapium sebiferum: Florida.
Schinus terebinthifolia: Florida.
Stranvaesia davidiana: Florida.
Tabernaemontana coronaria: Florida.
Tecomaria capensis: Florida.
Thuja orientalis: Florida.
Trachelospermum jasminoides: Florida.
Viburnum plicatum: Florida.
V. rhytidophyllum: Florida.

Coleosporium campanulae (Pers.) Lév. (xxx) **bluebell-pine rust**

Heteroecious. Forms white tubular outgrowths upright on the needles of hard pines, which contain golden-yellow powdery spores. On *Campanula* leaves, it appears as orange-red powdery pustules followed by blood-red, waxy crusts bursting through the leaf epidermis. This is the overwintering stage of the fungus. Distributed widely in temperate North America and in Europe and Japan.

Pinus sylvestris: New York.

Coleosporium delicatulum Hedgc. & Long (xxx) **goldenrod-hard pine rust**

Heteroecious. Similar to *Coleosporium campanulae* in appearance. Attacks needles of hard pines and leaves of species of *Solidago*. Distributed from Maine to eastern Kansas, south to Florida and eastern Texas. Limited to North America.

Pinus nigra: Pennsylvania.

Coleosporium domingense (Berk.) Arth. (xxx) **Plumeria rust**

? Heteroecious. Similar in appearance to *Coleosporium campanulae*. Conifer host, if any, is unknown. The pathogen is known from Florida, Central America, and the West Indies.

Plumeria rubra: Florida.

Coleosporium senecionis (Pers.) Fr. (xxx) **Senecio-hard pine rust**

Heteroecious. Similar in appearance to *Coleosporium campanulae*. Apparently native in Europe and Asia. Reported from South America. It has been imported into North America several times since about 1880, but is not known to be established. It is easily carried in hay packing containing *Senecio* plants.

Pinus nigra.

Coleosporium solidaginis (Schw.) Thuem. (xxx) **aster-goldenrod-hard pine rust**

Heteroecious. Similar to *Coleosporium campanulae* in appearance. It is native in North America and one of the most common rusts. Reported from Mexico northward to Alaska, and from Bermuda; also from China and Japan.

Pinus mugo: New Jersey.
P. nigra: Connecticut, New Jersey, Pennsylvania.
P. sylvestris: New Jersey.
P. thunbergii: Maryland.

Coleosporium sonchi-arvensis (Pers.) Lév. (xxx) **Sonchus-hard pine rust**

Heteroecious. Similar to *Coleosporium campanulae* in appearance. A European pathogen of *Pinus sylvestris* and *Sonchus* spp. Found in Wisconsin and in Washington State. Apparently not established in either place. Reported in the West Indies.

Pinus sylvestris: Wisconsin.
Sonchus arvensis: Washington.

Coleosporium vernoniae Berk. & Curt. (xxx)
Vernonia-hard pine rust

Heteroecious. Similar to *Coleosporium campanulae* in appearance. This parasite ranges from Massachusetts, Indiana, and Nebraska southward to Florida and Texas; also in the West Indies and Columbia.

Pinus mugo: Ohio.
P. nigra: Ohio, Kentucky, Indiana.
P. sylvestris: Ohio.

Colletotrichum cinnamomi Tharp (xxx)
Cinnamomum anthracnose

Causes spots running lengthwise of the leaves, black becoming ashy-gray with black edges. Known only from the type locality, Alvin, Tex.

Cinnamomum zeylanicum: Texas.

Colletotrichum gloeosporioides Penz. (xx)
broadleaf anthracnose

Causes wilting and dieback of many kinds of trees and shrubs. The pathogen occurs practically throughout the Tropics wherever citrus fruits are grown.

Camellia spp.
Carissa carandas: Florida.
Catha edulis: Florida.
Euphorbia pulcherrima: Texas.
Feijoa sellowiana: California.
Jasminum spp.: Florida, Texas.
Jatropha curcas: Florida.
Pandanus spp.
Pouteria spp.: Florida.
Punica granatum: Florida.
Roystonea spp.: Florida, Texas.
Tecomaria capensis: Texas.

Colletotrichum griseum Heald & Wolf (x)
Euonymus anthracnose

Causes leaf blotches, yellow turning to brown with gray centers. Cankers of twigs and branches also form. Reported from New York, New Jersey, and Texas.

Euonymus spp.: New Jersey, New York.
E. japonicus: Texas.

Colletotrichum hibisci Poll. (x) **Hibiscus anthracnose**

Causes brown leaf blotch and stem lesions of *Hibiscus* in the Gulf States, Java, and Italy.

Hibiscus rosa-sinensis: Florida, Texas.

Colletotrichum philodendri P. Henn. (x)
Philodendron anthracnose

Causes rounded whitish leaf spots of *Philodendron* spp. in Puerto Rico, Brazil, and New Jersey, the latter evidently imported.

Philodendron spp.: New Jersey.

Colletotrichum pollaccii Magnaghi (x) **Aucuba anthracnose**

Occurs on leaf spot of *Aucuba japonica* in Japan. Probably imported into Mississippi and New Jersey, but identity is uncertain.
Aucuba japonica: Mississippi, New Jersey.

Collybia velutipes Curt. (xx) **hardwoods root rot**

Causes a white, stringy root and collar rot. Widely distributed in North America, Europe, Mexico, Asia, and Australia.
Aesculus hippocastanum: Rhode Island.

Coniothyrium fuckelii Sacc. (x) **shrub dieback**

Causes stem lesions and dieback of shrubs. Widely distributed in Europe and North America.
Euonymus spp.: California.

Coniothyrium insitivum Sacc. (x) **hardwoods dieback**

Occurs on lesions of twigs of broad-leaved trees and shrubs. Widely distributed in North America; in Italy and France in Europe.
Ailanthus altissima.
Albizia julibrissin: Southeastern States.
Berberis vulgaris: Nebraska, Wisconsin.

Coniothyrium ulmi Tharp (x) **elm leaf spot**

Causes angular, white leaf spots of *Ulmus* spp., 0.3 to 3 mm. across. In Nebraska, Iowa, Texas, West Virginia.
Ulmus procera: Texas.
U. pumila: West Virginia.

Corticium galactinum (Fr.) Burt (xx) **white root rot**

Causes a white, stringy rot of roots and butts of many species of coniferous and broad-leaved trees. Generally distributed in northern North America; also reported in the West Indies, Europe, and Japan.
Exochorda racemosa.
Jasminum spp.: Maryland.
J. nudiflorum.
Prunus glandulosa.
P. triloba.
Spiraea thunbergii.
Viburnum carlesii: Maryland.

Corticium salmonicolor Berk. & Br. (xxx) **pink disease**

Causes the pink disease of the Tropics that attacks practically all woody plants. It appears as whitish to pink pustules on the bark of trunks and branches followed by a web of pink mycelium on the surface of the bark. The outer wood layers are infected and killed also. It occurs in North America in the Gulf States, in Mexico, Guatemala, and the West Indies. It is known in Colombia, Peru, and Brazil in South America, and the tropical countries of Africa and Asia.
Ficus carica: Gulf States.

Coryneum asperulum Lombard & Davidson (x) **Cupressus blight**

Accompanies blight of leaves, buds, and twigs of Italian cypress. Pathology of the fungus is unknown. Known only in Alabama.

Cupressus sempervirens: Alabama.

Coryneum berckmanii Milbrath (xxx) **Coryneum blight**

Causes destructive blight of Oriental arborvitae and Italian cypress, killing small branches and spreading gradually to those adjacent until the tree is killed. Much damage has resulted in nurseries and home gardens in California, Oregon, and Washington. This parasite appears to pose a real threat to the cypresses and arborvitae of the Old World.

Cupressus sempervirens: California, Oregon.
Thuja orientalis: California, Oregon, Washington.

Coryneum cardinale Wagener (xx) **Coryneum canker**

Causes girdling cankers on twigs, branches, and stems, most frequent on branches 1 to 4 cm. in diameter. *Cupressus macrocarpa* is much more susceptible and suffers more damage than any other host. *C. sempervirens* L. var. *stricta* Ait. is infected only where *C. macrocarpa* is already attacked. Isolated cases of infection have occurred on *Cupressus* spp., *Thuja orientalis* L., *Chamaecyparis lawsoniana* (Murr.) Parl., *Libocedrus decurrens* Torr., *Juniperus chinensis* L. var. *foemina* (L.) Gordon. California is the only place in North America where the canker is known. It is reported from Argentina; France and Italy in Europe; Kenya in Africa; Australia and New Zealand.

Cupressus sempervirens: California.
Juniperus chinensis: California.
J. sabina: California.
Thuja orientalis: California.

Cristulariella depraedens (Cke.) Hoehn. (xxx) **maple gray blotch**

Causes gray nonmarginate leaf spots on *Acer* spp. in moist locations. Severe attacks end in wilting and dropping of diseased leaves. The parasite has been reported from Ontario, Connecticut, New Hampshire, New Jersey, New York, Vermont, and West Virginia in North America. It is also reported from Europe in England and Germany.

Acer palmatum: Connecticut, New Jersey, West Virginia.
A. platanoides: Connecticut, New Jersey.

Cristulariella pyramidalis Waterman & Marshall (xxx) **maple yellow blotch**

Causes yellowish-gray mold of *Acer* leaves in very humid locations. Known only in eastern United States. Uncommon.

Acer pseudoplatanus: New York, Pennsylvania.

Cronartium cerebrum Hedgc. & Long (xxx) **American pine-oak gall rust**

Heteroecious. Causes globoid galls on stems of hard pines. Has as alternate hosts numerous species of *Quercus* and *Pasania*, and

some species of *Castanea*. The rust is distributed from Ontario, Maine, and Minnesota to Texas and Florida.

Castanea mollissima.
Pinus densiflora: Massachusetts.
P. nigra: North Carolina.
P. nigra var. *poiretiana:* North Carolina.
P. pinaster: Florida.
P. sylvestris: Minnesota, Pennsylvania, Virginia.
P. thunbergii: North Carolina.

Cronartium comandrae Pk. (xxx) **Comandra blister rust**

Heteroecious. Causes little or no fusiform swellings on hard pine stems, with alternate stage on *Comandra* spp. Known from Quebec to Northwest Territory and British Columbia, and locally southward to northern Mississippi, New Mexico, and California.

Pinus nigra: Connecticut.
P. sylvestris: Connecticut.

Cronartium comptoniae Arth. (xxx) **sweetfern blister rust**

Heteroecious. Alternates between hard pine stems and *Comptonia* and *Myrica gale* L. leaves. It is a native American disease distributed in eastern United States and Canada. The fungus is known in an area on the Pacific coast extending from Prince Rupert to Mount Shasta in California, where it appears to be endemic. Apparently the hard pines are mostly susceptible. With *Myrica gale* present in the North Temperate Zone around the world, this disease is a real threat to Old World hard pines if it once gains entry.

Pinus densiflora: Pennsylvania.
P. mugo: New England States to Ohio.
P. nigra: Vermont to New Jersey, Ohio, and Wisconsin.
P. sylvestris: New England States to Missouri and Wisconsin.

Cronartium filamentosum (Pk.) Hedgc. (xxx) **paintbrush blister rust**

Also known as *Cronartium stalactiforme* Arth. & Kern. Prevalent in the Pacific coastal and Rocky Mountain regions to Mexico on *Pinus contorta, P. jeffreyi,* and *P. ponderosa* and in Guatemala on *P. montezumae.* Reported also in Quebec on *P. mugo.* Alternate hosts are *Castilleja* spp., *Cordylanthus* sp., *Orthocarpus* sp., and *Pedicularis* sp. This rust should be considered potentially dangerous to Old World hard pine forests.

Pinus mugo: Quebec.

Cronartium (Peridermium) **harknessii** (Moore) Meinecke (xxx) **western globoid stem gall**

Also known as *Cronartium coleosporioides* (Diet. & Holw.) Arthur and *Peridermium cerebroides* Meinecke. It is a collective species consisting of two or more distinct components. Lack of adequate comparative cross inoculations prevents separating these components satisfactorily. The autoecious so-called Woodgate rust of *Pinus sylvestris* in New York and Quebec, Can., has been definitely proved, by Professor J. S. Boyce, to be *C. harknessii.* Distributed from

Alaska to Mexico and eastward to western Nebraska, Quebec, New Brunswick, Central and South America. Not needing alternate hosts, it is a real danger to Old World hard pine forests.

Pinus canariensis.
P. halepensis.
P. sylvestris: New York, Quebec.

Cronartium ribicola J. C. Fisch. (xxx) **white pine blister rust**

Heteroecious. Causes large bark cankers on trunks and branches of 5-needled pines and yellow powdery rust pustules on the lower surface of *Ribes* leaves, followed by brown, coarse, hairlike projections. The fungus is believed to be endemic in eastern Asia and to have been carried to Europe about a century ago. It spread over Europe wherever 5-needled pines and *Ribes* thrive. White pine blister rust came to North America in young infected nursery stock of *Pinus strobus* about 1900 and in larger numbers from 1907 to 1910, and was widely distributed as far west as Minnesota.

A single shipment of 1,000 infected transplants went directly from Europe to Vancouver, B. C., in 1910. The rust has since spread over the entire range of *Pinus monticola*, into northern California on *P. lambertiana*, on *P. flexilis* in Montana, and is common on *P. albicaulis* near timberline in the Pacific Northwest and British Columbia. It has thus traversed the North Temperate Zone around the world.

As the fungus cannot spread from pine to pine, removal of *Ribes* to a sufficient distance from valuable white pine stands will control attacks. At heavy expense, justified by the high value of lumber, a catastrophe like that of the chestnut blight can be, and is being avoided. In North America it has infected three foreign white pines as follows:

Pinus cembra: Massachusetts, Minnesota, Vancouver, B. C.
P. griffithii: Massachusetts.
P. parviflora: Massachusetts.

Cryptodiaporthe castanea (Tul.) Wehm. (xx) **chestnut wilt**

Causes cankers of twigs and young stems, resulting in wilt of distal parts. Inoculations of wounds were successful. The pathogen is widely scattered in eastern United States and is known in several European countries. Possibly it came to America many years ago on imported chestnut stock. Damaging in nurseries, and able to attack subnormally vigorous trees more aggressively than those making optimum growth.

Castanea crenata: Eastern United States.
C. henryi: Eastern United States.
C. mollissima: Eastern United States.
C. sativa: Maryland, District of Columbia.

Cryptodiaporthe salicina (Curr.) Wehm. (xx) **willow canker**

Causes small bark cankers and wilt of distal parts of willows. Widely distributed in North America and Europe.

Salix alba: Connecticut, New York, Maryland.
S. babylonica: Massachusetts, New Mexico.

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Cryptomyces maximus (Fr.) Rehm (xxx) **willow canker**

Causes thickened mycelial cushionlike crusts to form on twigs and stems of willows, especially in basket willow holts. In one area in Scotland, 2 acres of basket willows were destroyed by it. Reported in North America. Probably imported from Europe, where it is evidently endemic in western and northern Europe.

Salix viminalis: New Mexico, Utah.

Cumminsiella sanguinea (Pk.) Arth. (xxx) **Mahonia rust**

Autoecious. Causes powdery, yellow (later brown) pustules on the lower leaf surface. Known in North America from Washington, Wyoming, and South Dakota southward to Guatemala. Widely distributed in Europe on *Mahonia.* First reported in Scotland in 1930, apparently newly introduced. Has spread very rapidly.

Berberis spp.: Oregon.

Cylindrocladium scoparium Morg. (x) **root rot**

Associated with root rot (and occasionally leaf spot) of many broad-leaved and coniferous trees, especially in nurseries under highly humid conditions. Widely distributed on all continents except Australia.

Ilex rotunda.
Larix leptolepis: New Jersey.
Magnolia ×*soulangiana.*
Picea abies: Delaware, New Jersey.
Pinus sylvestris: Delaware.
Rhododendron indicum.
R. obtusum.

Cylindrosporium bambusae Miyake & Hara (x) **bamboo blight**

Occurs on leaves and culms of bamboos. Presumably native in Japan. Found in Georgia.

Bambusa spp.: Georgia.

Cylindrosporium juglandis Wolf (xxx) **Juglans leaf spot**

Causes leaf spot of *Juglans* in North America.

Juglans regia: Alabama, North Carolina.

Cylindrosporium salicinum (Pk.) Dearn. **willow leaf spot**

Causes leaf spot of willow. Known only in the United States.

Salix fragilis: Wisconsin.

Cytospora ailanthi Berk. & Curt. (x) **Ailanthus dieback**

Cytospora species are numerous and abundant. Many are known to be imperfect stages of Ascomycetes, such as *Valsa* spp., but many are known only in their *Cytospora* stage. They live in the bark of woody plants and appear as pustules partly sunken within the bark.

Cytospora ailanthi is probably of Old World origin. It is known in North America and in England.

Ailanthus altissima: Kansas.

Cytospora evonymi Cke. (x) **Euonymus blight**

Associated with blight of *Euonymus* twigs in North America and Europe.

Euonymus spp.: California.

Cytospora pinastri Fr. (xx) **conifer needle blight**

Causes death of needles of pines and other conifers in North America and Europe.

Pinus sylvestris.

Daedalea confragosa Bolt. ex Fr. (xx) **hardwoods sap rot**

Conk flat, shelflike, large, corky, annual, gray to brown, occasionally reddish, rugose with thin margin; lower surface whitish to brownish, with irregular lamellate gills. Causes a white stringy rot of sapwood in living hardwood trees with large open wounds. The fungus is generally distributed in North America, in Europe, and in Asia in Siberia, and in the Philippines.

Salix babylonica: Pennsylvania.

S. fragilis: Massachusetts.

Daedalea quercina L. ex Fr. (xx) **brown heart rot**

A large, perennial conk, whitish and smooth to black and rimose with age on top; whitish to umber beneath. Pores irregularly daedaloid to nearly lamellate, with thick walls. On living hardwoods with large unhealed wounds or dead basal branches. Chestnuts and oaks are preferred hosts. The fungus ranges in the Allegheny and Atlantic coastal regions, with scattered occurrences west of the Mississippi River; also generally in Europe and in South Africa, India, Japan, and Siberia. Apparently adapted to carriage for long distances in infected timbers.

Castanea crenata: Pennsylvania.

Quercus robur: New York.

Daedalea unicolor Fr. (xx) **white trunk rot**

A white to brownish conk, flat, with slight imbricate shelving, leathery to corky, hirsute on top, zonate, often green with algae. Lower side white to brownish, poroid to roughly toothed. Usually on dead wood of hardwood trees, but rarely on coniferous wood. Evidently aggressively pathogenic after gaining entry to the tree trunk through large open wounds or dead basal branches. Generally distributed in North America from Alaska to California, eastward through Canada to Newfoundland, and southward to Louisiana and Texas. Also over Europe and in the Sudan, India, Japan, and Siberia.

Ailanthus altissima.

Dasyscypha ellisiana (Rehm) Sacc. (xx) **conifer bark canker**

Causes hypertrophy and roughening of outer bark on young stems that normally have smooth bark. The tiny cuplike fruiting bodies are formed in the crevices of the rough bark. The cups are about 1 mm. across, white to yellow and downy outside, light orange to chrome inside. Found on larches, spruces, pines, and Douglas-fir in

the Gulf and Atlantic Coast States west to Ohio, and West Virginia. Known only in the United States where it has become parasitic on conifers growing outside their native range. It might become aggressive under European conditions.

Larix decidua: New York, Rhode Island.
L. leptolepis: Massachusetts.
Pinus cembra: Connecticut.
P. nigra: Connecticut, Ohio.
P. sylvestris: Massachusetts, New Jersey, Pensylvania, Rhode Island.

Dermascia dracaenae (Phil. & Harkn.) Tehon (xx) **Dracaena black spot**

Forms black, elliptical, thickened crusts scattered over straw-yellow, small to very large spots on *Dracaena* leaves. Known only in the United States.

Dracaena spp.: California.

Didymosphaeria populina Vuill. (xx) **poplar leaf spot**

Said to cause dieback of poplar trees in Europe. Reported in Kentucky, Maine, and Minnesota as causing leaf spot. Known in France, Germany, and Italy.

Populus alba: Maine.
P. nigra var. *italica:* Kentucky, Minnesota.

Dimerosporium pulchrum Sacc. (x) **sooty mold**

Causes sooty mold of hardwoods in North America in Wisconsin, Nebraska, and Mississippi westward.

Trachelospermum jasminoides: Louisiana.

Diplodia camphorae Tassi (x) **camphor canker**

Causes canker and resulting dieback for 4 to 6 feet. Known in Italy.

Cinnamomum camphora: Texas.

Diplodia pinea (Desm.) Kickx (xxx) **pine twig blight**

Causes cankers of pine twigs with resulting blight of the diseased twigs; also causes root and collar rot in nursery stock. In New Zealand and South Africa it attacks and kills pole-sized trees of *Pinus radiata* where hailstorms injure the bark and thus give entry to the inner tissues of vigorously growing trees. This disease is generally distributed in the United States, South America, and Europe, and is reported in Ontario, New Zealand, Australia, Mauritius, Mozambique, and Nyasaland. Its absence from the mainland in Asia, if really true, might indicate that it is carried principally on *P. nigra*, its most susceptible host in the United States.

Picea abies: New Jersey.
Pinus griffithii: Maryland.
P. mugo: Connecticut, Iowa, New Jersey, New York, Virginia.
P. mugo mughus.
P. nigra: Connecticut, District of Columbia, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Nebraska, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, Virginia, Wisconsin, and Ontario, Can.

P. pinea.
P. sylvestris: Delaware, Kansas, Illinois, Missouri, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Wisconsin, and Ontario, Can.
Sciadopitys verticillata: New Jersey.

Diplodina eurhododendri Voss (x) **Rhododendron leaf blotch**

Causes irregular, marginal, brown leaf spots with purplish border, often occupying a large part of the leaf. Known in England and Germany and reported in California. Probably of Old World origin and more generally distributed than these few reports indicate.
Rhododendron spp.: California.

Dothichiza pithyophila (Cda.) Petr. (x) **pine leaf blight**

Causes blight of hard pine needles. Reported in New Jersey; also in Europe from Great Britain to Spain and eastward to Germany.
Pinus nigra: New Jersey.

Dothichiza populea Sacc. & Briard (xx) **poplar canker**

Causes cankers of branches and young stems, which soon girdle and kill the part attacked. In North America, Lombardy poplar is the most susceptible poplar species, and it is limited to planted stands. Generally distributed in eastern and central United States, eastern Canada, and Europe; also reported in Argentina.
Populus alba: Connecticut, Indiana, Iowa, Massachusetts.
P. nigra var. *italica:* Connecticut, Delaware, Indiana, Maryland, Massachusetts, New Hampshire, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Vermont; and New Brunswick and Ontario in Canada.

Dothiorella gregaria Sacc. (x) **broadleaf canker**

Causes canker and wilt of many broad-leaved trees. Distributed in the United States, Argentina, and Europe.
Arecastrum romanzoffianum: California.
Juglans regia: California.

Dothiorella mori Berl. (x) **mulberry canker**

Causes canker and twig blight of mulberry in the United States and Italy.
Morus alba: New Jersey, Texas.

Dothiorella quercina (Cke. & Ell.) Sacc. (x) **oak twig blight**

Causes twig blight of oaks in North America.
Quercus robur: Maryland.

Dothistroma pini Hulbary (xxx) **hard pine needle blight**

Appears in late summer on 1-year-old needles of pines (mostly Austrian) as slightly swollen dark spots or bands. The distal ends of diseased needles turn brown and die. The swollen spots enlarge in March, and by May they form brown to black fruiting bodies protruding from the leaf tissues. The diseased needles are shed prematurely. The disease is reported from the States of Ohio, Illinois, Iowa, and

Oklahoma. How aggressive the fungus may be is not known, although it was first described about 15 years ago.

Pinus nigra: Illinois, Iowa, Maryland, Ohio, Oklahoma.

P. nigra var. *poiretiana:* Ohio.

Elsinoë fawcetti Bitanc. & Jenkins (xxx) **citrus scab**

Causes scab of citrus and related trees, affecting fruits, leaves, and stems. Distributed in practically all citrus-growing areas of the world. It is believed that this disease originated in the Orient and has been carried wherever citrus trees have been planted.

Clausena lansium: Florida.

Elsinoë ilicis Plakidas (xxx) **holly spot anthracnose**

Causes spot anthracnose of holly leaves, berries, and twigs on trees grown from seed from a tree about 50 miles distant. Reported only from Louisiana.

Ilex cornuta: Louisiana.

Elsinoë mangiferae Bitanc. & Jenkins (xxx) **mango scab**

Causes scab of mango leaves, ending with premature leaf fall. Known in Florida, El Salvador, Canal Zone, and Cuba.

Mangifera indica: Florida.

Elsinoë mattirolianum Arnaud & Bitanc. (xxx) **Arbutus scab**

Causes scab of leaves of *Arbutus* trees. Known in Italy, Germany, and Portugal. Also in California and Argentina. All known occurrences are on the European *A. unedo.* Apparently the fungus is endemic in Europe and was carried to California and Argentina, probably in early days.

Arbutus unedo: California.

Endoconidiophora paradoxa (Dade) Davidson (xx) **palm bud rot**

Causes bud rot, stem bleeding, and leaf blight of palms. Because of lack of agreement as to the organism causing the trouble, only general statements can be made concerning its distribution. Probably in most tropical regions.

Cocos nucifera: Florida.

Phoenix dactylifera: Arizona, California.

Endothia gyrosa (Schw.) Fr. (xx) **Fagaceae canker**

Causes slow cankering of injured roots and branches of many broad-leaved trees, especially oaks and sweet gum in North America. Distributed from Connecticut to Michigan and southward to Florida and Texas; also in Kansas and California. In the Old World reported from Europe and the Philippines.

Fagus sylvatica: Maryland.

Quercus robur: South Carolina.

Q. suber: Alabama, California, Florida, Georgia, South Carolina, Virginia.

Endothia parasitica (Murr.) P. J. & H. W. Anderson (xxx)
chestnut blight

Causes bark canker of chestnuts, chinkapins, and oaks, which soon girdles the trunk or branch and kills it. The fungus can attack in any growth crack of the bark and is not controllable by spraying or removing infected trees. It forms yellowish mycelial fans between the dead bark and the wood. Abundant fruiting pustules form in the growth crevices of thick bark at any and all times in the year. The fungus was endemic in China or Mongolia. When in Japan in 1927 to 1930, R. Kent Beattie stated that chestnut blight was acting as though it were recently introduced there.

It was discovered in 1904 at the New York Zoological Park. The American stands of chestnut timber have been killed. The pathogen was carried to Europe during World War I and has spread over much of the chestnut forests there. It is the most destructive forest tree disease known in the entire world. The only method of control seems to be selecting and breeding resistant chestnuts to establish new forests.

Castanea crenata: New York, Pennsylvania.
C. henryi.
C. mollissima: New York, North Carolina, Pennsylvania.
C. sativa: General where grown in the East; localized in California, Oregon, and Washington.
C. seguinii.

Erysiphe lagerstroemiae E. West (xxx)
crapemyrtle powdery mildew

Forms a heavy, white, dusty coating on leaves, young stems, and inflorescences of crapemyrtle. Known only in the District of Columbia and North Carolina southward to Florida and in the Gulf States to Texas. Overwinters in dormant buds. Seldom forms the perithecial stage.

Lagerstroemia indica: Florida, North Carolina.

Erysiphe polygoni DC. (xxx) **hardwoods powdery mildew**

Causes a white, powdery coating on the leaves, young shoots, and inflorescences of a large miscellany of woody-stemmed plants. Distributed on all continents except Australia.

Acacia cyclops: California.
Colutea arborescens.
Erica spp.: California.
Gardenia jasminoides: Texas.
Genista spp.: Missouri.
Homalocladium platycladum: New York, Pennsylvania, Wisconsin.
Hydrangea macrophylla: Minnesota, Ohio.
H. paniculata: (general).
Juglans regia: California.
Lycium chinense: Minnesota.
L. halimifolium: Connecticut, Delaware, Maryland, New Jersey, Pennsylvania.

Exobasidium burtii Zeller (xxx) **Rhododendron yellow leaf gall**

Causes round, yellow-buff leaf galls on *Rhododendron* in New Jersey and Washington.

Rhododendron flavum: New Jersey.

Exobasidium camelliae Shirai (xxx) **Camellia leaf gall**

Causes *Camellia* leaves and shoots to become thick and fleshy or gall-like. Inflorescences are deformed and reduced to irregular round masses. Occurs in Japan and is reported in Great Britain; also in the United States in the Gulf States.

Camellia japonica: Florida, Louisiana, Mississippi, Texas.

C. sasanqua: Florida, Louisiana, Mississippi, Texas.

Exobasidium monosporum Sawada (xxx) **Theaceae leaf curl**

Causes leaf curl of *Camellia* and related trees. Reported in Alabama on *C. japonica* and in Formosa on *Gordonia anomala* Spreng. Probably native in eastern Asia and introduced into North America in early days.

Camellia japonica: Alabama.

Exobasidium vaccinii Wor. (xxx) **Rhododendron leaf gall**

Causes fleshy galls of leaves, young shoots, and inflorescences. Leaf galls usually are reddish on the upper side. Generally distributed in Europe and North America, also in Jamaica.

Rhododendron spp.: (general).

Exobasidium vaccinii-uliginosae Boud. (xxx) **Ericaceae shoot gall**

Causes shoot gall and witches'-broom on some hosts, while others show only reddening of the upper surfaces of leaves on diseased shoots. Evidently native in the Pacific Coast States, Canada, and mountainous parts of Europe on *Rhododendron* and *Vaccinium* species.

Rhododendron spp.: New Jersey.

Exosporina fawcetti E. E. Wilson (xx) **Fagaceae wilt**

Causes sudden wilting of single branches successively until the entire tree is moribund. Areas of dead bark on larger limbs shed the periderm and expose a brown or black powder of fungus spores.

Castanea sativa: California.

Juglans regia: California.

Exosporium concentricum Heald & Wolf (x) **broadleaf zonate leaf spot**

Causes zonate leaf spots with concentric bands of brown and grayish yellow. In severe cases the leaves fall prematurely. Known only from Alabama to Texas.

Euonymus japonicus: Texas.

Ligustrum spp.: Texas.

Exosporium palmivorum Sacc. (xxx) **palm leaf spot**

Causes rounded brown leaf spots, 1 to 3 cm. across, on palms. Distributed in the United States, Europe, India, Formosa, and Andaman Islands.

Arecastrum romanzoffianum: Florida.

Phoenix canariensis: Florida, Louisiana, Texas.
P. dactylifera: Gulf States.

Fabraea maculata Atk. (xxx) **Pomaceae leaf blight**

Causes red to dark brown leaf blight on pear and related trees. Apparently it has been carried around the world on pear and probably has spread thence to a number of related genera.

Cotoneaster spp.: California, Iowa.
Pyrus spp.: Virginia.
P. pyrifolia: Iowa, Louisiana, Maryland, Mississippi, New York.
Raphiolepis indica: San Francisco County (in nurseries).
R. umbellata: California.
Sorbus aucuparia: Wisconsin.

Fomes annosus (Fr.) Cke. (xx) **white stringy root rot**

Causes root rot without shoestring formation and with thin, filmy white mycelial tissue between the bark and wood. Small pockets containing cottony, white fibers form in later stages of the rot. Some pockets have a black center in the white threads. Occurs throughout the North Temperate Zone and Australia on many conifers but also on hardwoods to some extent.

The conks usually form on the broken ends of rotted roots of overturned trees and often are completely hidden by loose soil. They are irregular in shape, up to 7 cm. or more across, grayish brown above, white to yellowish below, and with a distinct sterile border beneath. In affected timbers this root rot is well adapted to carriage for a long distance.

Picea abies: Connecticut.
Pinus densiflora: Connecticut.
P. sylvestris: Connecticut.

Fomes applanatus (Pers. ex Fr.) Gill. (xx) **hardwoods white mottled rot**

A broad shelflike conk up to 40 cm. or more wide, gray to brown on top, with a hard crust; white to yellowish below, turning dark brown where scratched. Cosmopolitan in distribution on living hardwood trees. Typical occurrence is on older trees with large wounds on the trunk. The mottled white rot usually extends but a few feet from the point of entry.

Eucalyptus globulus: California.
Ligustrum spp.: New York.
Populus alba: Connecticut, Utah.
Salix alba: Connecticut.
Schinus molle: California.

Fomes connatus (Weinm. ex Fr.) Gill. (xx) **hardwoods white spongy rot**

Conk white, single or imbricate, soft, corky, often with moss growing on the hairy top; up to 16 cm. wide, 5 to 8 cm. thick, projects 3 to 8 cm. from the tree, and usually has thin edges. Entry is gained through a large, open wound. Many hardwoods are attacked, the type of wound available apparently having more influence upon

attack than the kind of tree. The fungus is widely distributed in the North Temperate Zone; also reported in South Africa.

Acer platanoides: Connecticut.

Ginkgo biloba: Maryland.

Fomes igniarius (L. ex Fr.) Kickx (xx) **hardwoods white heart rot**

Causes a spongy white rot of heartwood in very many hardwoods and rarely in conifers. The conk is hoof shaped, up to 20 cm. or more in width, brown to black above and brown below. The upper surface is roughly cracked and fissured. Inside, there are multiple layers of growth. The texture is very hard; the outside is clinker-like. It is widely distributed throughout the North Temperate Zone and is reported in Australia.

Buxus sempervirens var. *arborescens:* Virginia.

Fomes pini (Brot. ex Fr.) Karst. (xx) **conifer red ring rot**

Causes red ring or crescent-shaped areas in cross sections of early stages of decay in coniferous woods. Later, small tapered pockets form with white straight fibers running lengthwise. The pockets are separated by strong, sound wood until a very late stage of the rot.

The conk is of two forms: (1) typical form is large, rusty brown to nearly black on top, cracked and rough, hoof shaped, stemless, very hard, laminated when split open, with numerous layers of pores; (2) variety *abietis* grows as brown, flattened disks 3 to 4 cm. in diameter attached to the bark of diseased tree trunks, sometimes showing slight shelving edges. Distributed in all coniferous forests of North America, Europe, and Asia. It attacks hardwoods rarely. This rot may be readily carried across oceans in infected timbers.

Larix decidua: Massachusetts, Connecticut.

Pinus sylvestris: (widespread).

Fomes robustus Karst. (xx) **yellowish trunk rot**

Causes yellowish rot, mostly of sapwood, of hardwoods and some conifers; also known on cacti (*Cereus* and *Opuntia*). The conk resembles *Fomes igniarius* in appearance, has a bright-colored shiny context, usually no setae, and has definitely stratified pores. Widely but sparsely distributed in North America from Alaska eastward and southward in Canada, through the United States and southward to Nicaragua; in all of Europe, and in Siberia, Japan, South Africa, Australia, and New Zealand, and in Hawaii.

Eucalyptus spp.: California.

Fusarium buxicola Sacc. (x) **box canker**

Fusarium buxicola is one of a large group of inconspicuous fungi that live as saprophytes in the soil. Many species, however, can attack living plants, causing wilt, dieback, leaf spot of older trees, and damping-off of young seedlings. They can be identified only with a microscope or hand lens. *F. buxicola* causes canker and dieback of branches of box trees. Evidently native in the Mediterranean Basin, home of *Buxus sempervirens*, the commonly grown species.

Has accompanied this host apparently since early days. Now found widely in Europe and North America.

Buxus sempervirens var. *arborescens:* Alabama, Maryland, Pennsylvania.

B. sempervirens var. *suffruticosa:* Alabama, Maryland, Pennsylvania.

Fusarium lateritium Nees (xx) **hardwoods twig blight**

General habits and symptoms similar to those given for *Fusarium buxicola.* Causes blight of twigs and leaves of many broad-leaved trees in North America and Europe; reported in eastern Africa and in Formosa and Japan.

Ailanthus altissima: Virginia.

Albizia julibrissin: Pennsylvania, South Carolina, Virginia.

Buxus sempervirens var. *arborescens:* Maryland, South Carolina, Virginia.

B. sempervirens var. *suffruticosa:* Maryland, South Carolina, Virginia.

Euonymus japonicus: California.

Hibiscus spp.: Florida, Louisiana, New York.

Juglans regia: Connecticut, New York.

Melia azedarach: South Carolina, Texas.

Fusarium oxysporum Schlecht. emend Snyder & Hansen (xx) **damping-off**

General habits and symptoms similar to those given for *Fusarium buxicola.* Causes root rot of *Buxus* in North America and Europe.

Buxus sempervirens var. *arborescens:* Maryland.

Fusarium oxysporum Schlecht. var. **aurantiacum** (Lk.) Wr. (xxx) **seedling blight**

General habits and symptoms similar to those given for *Fusarium buxicola.* Causes blight of hardwood seedlings.

Eucalyptus camaldulensis: California.

E. globulus: California.

E. robusta: California.

Fusarium perniciosum Hepting (xxx) **mimosa wilt**

General habits and symptoms similar to those given for *Fusarium buxicola.* Causes wilt and death of trees of *Albizia* in Georgia, New Jersey, North and South Carolina, and Virginia. Not otherwise known. Highly resistant trees have been found.

Albizia distachya.

A. julibrissin: Alabama, Georgia, New Jersey, North Carolina, South Carolina, Virginia.

A. lebbek.

Fusarium scirpi Lambotte & Fautr. var. **acuminatum** (Ell. & Ev.) Wr. (xxx) **damping-off**

General habits and symptoms similar to those given for *Fusarium buxicola.* Reported in North America as causing damping-off of conifers in nurseries and stem canker of *Ricinus.* Also reported in Europe and Australia.

Ricinus communis: Louisiana.

Fusarium solani (Mart.) Appel & Wr. (xxx) **Fusarium root rot**

General habits and symptoms similar to those given for *Fusarium buxicola.* Causes root rot and damping-off of conifers and hardwoods. Generally distributed in the North Temperate Zone.

Acer platanoides: New Jersey.
Buxus sempervirens var. *arborescens:* Maryland.
Cupressus sempervirens: Texas.
Parthenium argentatum.

Fusicladium pyracanthae (Otth) Rostr. (xxx) **Pyracantha scab**

Causes black scab of leaves and fruits of *Pyracantha.* Widespread in North America and Europe.

Pyracantha coccinea.

Fusicladium saliciperdum (Allesch. & Tub.) Tub. (xxx) **willow scab**

Causes olive-brown, velvety scab pustules along the main veins on the lower leaf surface of willows. Often the young, growing twig is killed back to the preceding season's growth; and, with all the leaves wilted, the affected area greatly resembles frost injury. Certain willow varieties or clones are especially susceptible. *Salix alba* var. *vitellina* and *S. cordata* are heavily attacked, while several others are lightly or not at all scabbed.

Known in Europe since 1859 and in North America since 1927. Generally distributed in Europe and in eastern United States and Canada; also British Columbia. Evidently of Old World origin and rather recently introduced into North America (1920?). Diseased trees die in 3 or 4 years if heavily defoliated each year. Many thousands of roadside and streamside trees have been killed in eastern North America where willows are important only as shade or ornamental trees. In the West, where they are valuable in holding streambanks, the disease may be much more serious.

Fusicladium saliciperdum often occurs with *Physalospora miyabeana* on the same trees but somewhat earlier in the season. Both are stimulated by high humidity continued for 2 or 3 days. *F. saliciperdum* attacks newly formed leaves and runs downward in the young shoots but a short distance, whereas *P. miyabeana* appears a little later and seems able to attack and kill older shoot growth.

Salix alba: Connecticut, Massachusetts, Maine, New Hampshire, New York.
S. babylonica: Massachusetts.
S. fragilis: Massachusetts, New York.

Ganoderma lucidum (Leyss. ex Fr.) Karst. (xx) **stringy white trunk rot**

Causes a stringy white wood rot at the base of living hardwood and coniferous trees. Conk large, up to 25 cm. across, sessile, upper surface appears varnished, brownish to reddish; grows from a wound near the base of the tree. Pores of the lower surface white to brown, round to irregular, 3 to 6 per mm. Distributed widely in North and South America, Europe, Asia, Africa, and Australia.

Buxus sempervirens var. *arborescens:* Virginia.
Picea abies: Pennsylvania.

Salix babylonica: Maryland.
Schinus molle.

Ganoderma zonatum Murr. (xx) **palm butt rot**

Causes butt and trunk rot of palmetto and palm trees in Georgia, Florida, South Carolina, and Texas. Also in Honduras.
Arecastrum romanzoffianum: Florida.

Gloeosporium ailanthi Dearn. & Barth. (xxx) **Ailanthus anthracnose**

Causes small, round, grayish, circinately ridged spots on living *Ailanthus* leaves. Reported in Louisiana and West Virginia.
Ailanthus altissima: Louisiana, West Virginia.

Gloeosporium aleuriticum Sacc. (xxx) **tung anthracnose**

Causes anthracnose of leaves and stems of *Aleurites* in the Philippines and Indochina. Also reported in Mississippi, probably introduced on seeds.
Aleurites fordii: Mississippi.

Gloeosporium apocryptum Ell. & Ev. (xxx) **maple anthracnose**

Causes purple to brown narrow lines along the veins on the lower side of the leaves of *Acer platanoides.* Widely distributed in North America. Apparently not known under this name in the Old World.
Acer platanoides: Maine, New York.

Gloeosporium aquifolii Penz. & Sacc. (xxx) **holly anthracnose**

Causes anthracnose of holly leaves in Italy; also reported in North America in New Jersey, Texas, and Washington on *Ilex aquifolium.* The scattered distribution on a foreign host may indicate that it has been introduced from Europe and that it was originally native there.
Ilex aquifolium: New Jersey, Texas, Washington.

Gloeosporium coryli (Desm.) Sacc. (xxx) **Corylus anthracnose**

Causes anthracnose of *Corylus avellana* leaves. Widely distributed in North America on American hazels. In New Jersey it was found on *C. avellana* trees imported from England.
Corylus avellana: New Jersey.

Gloeosporium frigidum Sacc. (xxx) **Euonymus anthracnose**

Causes anthracnose of leaves of *Euonymus japonicus.* Known on *E. japonicus* in Arkansas and Mississippi; also in Italy.
Euonymus japonicus: Arkansas, Mississippi.

Gloeosporium inconspicuum Cav. (xxx) **elm anthracnose**

Causes anthracnose of elm leaves. Reported in Massachusetts, Ohio, Illinois, and Iowa. Also in Italy and Great Britain.
Ulmus procera: Massachusetts.

Gloeosporium mezerei Cke. (xxx) **Daphne anthracnose**

Causes anthracnose of *Daphne* leaves in England, Australia, and Washington State.
Daphne spp.: Washington.

Gloeosporium oleae Patterson (xxx) **Osmanthus leaf blotch**

Occurs on a white, dry, leaf blotch of *Osmanthus* with inconspicuous brown margins. Known in the United States in Maryland.

Osmanthus fragrans: Maryland.

Gloeosporium polymorphum Trinch. (x) **Dracaena anthracnose**

Causes large, brown to ashy leaf blotches on *Dracaena* spp. Reported in Italy. Said to be widespread in the United States.

Dracaena spp.

Gloeosporium rhododendri Briosi & Cav. (xxx) **Rhododendron anthracnose**

Causes large, irregular, dry, zoned blotches on rhododendron leaves. Distributed in the United States in New York and Maryland. Reported in England and Italy.

Rhododendron spp.: Maryland, New York.

Gloeosporium saccharinum Ell. & Ev. (xxx) **maple anthracnose**

Causes subcircular, maple leaf spots, 5 to 15 mm. across, pale olive or reddish brown turning pale brown. Known in United States only.

Acer platanoides: Iowa, Wisconsin.

Gloeosporium salicis West. (xxx) **willow anthracnose**

Causes numerous small, angular leaf spots on willows. Apparently widely distributed in Europe and North America.

Salix alba: Wisconsin.

S. fragilis: Wisconsin.

Gloeosporium tabernaemontanae Speg. (xxx) **Tabernaemontana anthracnose**

Causes leaf spot in Florida and Brazil. May have been brought to Florida from Brazil.

Tabernaemontana sp.: Florida.

Gloeosporium tiliae Oud. (xxx) **linden anthracnose**

Causes spotting of leaves and petioles of *Tilia* spp., resulting in premature defoliation. Common in Europe. Also known in the United States in Connecticut, Massachusetts, and New York; possibly imported from Europe.

Tilia cordata: New York.

Gloeosporium ulmicolum Miles (xxx) **elm anthracnose**

Causes elongated, raised elm leaf spots following the veins. Apparently found only in North America east of the 100th Meridian. The habit of the fungus in following the larger veins of the leaves, like the oak and plane anthracnoses, may indicate to other countries that some care should be taken not to introduce it.

Ulmus parvifolia: Kansas, Tennessee.

U. procera.

U. pumila.

Glomerella cincta (Ston.) Spauld. & Schrenk (xxx) **anthracnose**

Causes anthracnose of various kinds of plants, usually as grown in hothouses. Apparently American only.

Arecastrum romanzoffianum: New Jersey.
Dracaena spp.

Glomerella cingulata (Ston.) Spauld. & Schrenk (xxx) **broadleaf anthracnose**

Causes anthracnose of the most varied trees throughout the Tropics and Temperate Zones, usually as leaf blight, twig blight, or dieback.

Aesculus hippocastanum.
Aleurites fordii: Florida.
Annona cherimola: Florida.
Aucuba japonica.
Camellia japonica: Texas.
C. sinensis: Florida, South Carolina.
Carica papaya: (general).
Caryota sp.: Florida.
Cinnamomum camphora: Gulf States.
C. zeylanicum: Florida.
Clausena lansium: Maryland.
Codiaeum variegatum: Florida, New Jersey.
Cordyline spp.: New Jersey.
Crassula sp.: New Jersey.
Cycas revoluta: Florida, Louisiana.
Euonymus japonicus.
Ficus carica: North Carolina to Florida and Texas.
F. elastica: (general).
Garcinia mangostana: Maryland (greenhouse).
Ginkgo biloba: Maryland, Texas.
Hedera helix: Connecticut.
Hevea brasiliensis: Florida.
Ligustrum vulgare.
Mangifera indica: Florida, Texas.
Melia azedarach: Louisiana.
Montezuma speciosissima: Florida.
Nandina domestica: Texas.
Persea americana: (general).
Psidium guajava: Florida, Texas.
Pyrus pyrifolia: Mississippi.
Rhododendron spp.: Maryland.
Rollinia deliciosa: Florida.

Gnomonia leptostyla (Fr.) Ces. & de N. (xxx) **Juglans anthracnose**

Causes leaf spot of walnut (*Juglans*) practically everywhere walnut grows. Apparently it has accompanied its host for ages.

Juglans regia.

Gnomonia ulmea (Schw. ex Fr.) Thuem. (xxx) **elm black spot**

Causes small, shiny, black, raised spots on the upper surface of elm leaves. It is native in North America and is present wherever elms grow.

Ulmus procera: New Jersey.
U. pumila: (widespread).

Gnomonia veneta (Sacc. & Speg.) Kleb. (xxx)
Platanus anthracnose

Causes anthracnose of plane tree leaves, affecting and following the midvein and other main veins. Severe attacks cause premature defoliation. Twigs are often infected and killed back more or less. It is widely distributed in North America and in Europe and Argentina.

Platanus ×*acerifolia:* California, New Jersey, New York.
P. orientalis: (general).

Graphiola phoenicis (Moug.) Poit. (xxx) **palm black scab**

Causes small black pustules or scabs breaking through the epidermis of palm leaves, both outdoors in warm countries and in hothouses in cooler countries. The disease has followed or accompanied its host everywhere.

Arecastrum romanzoffianum: Florida.
Arenga pinnata.
Phoenix canariensis: (widespread).
P. dactylifera: Texas.
Roystonea spp.: Florida.

Guignardia aesculi (Pk.) V. B. Stewart (xxx)
Aesculus leaf blotch

Causes irregular, red to brown blotches with yellowish margins on *Aesculus* leaves and similar spots on the petioles. Heavy attacks occur every year or two resulting in complete, or nearly complete, defoliation of affected trees. It is serious on young nursery trees. Reported as generally distributed in Europe and throughout North America wherever *Aesculus* trees grow.

Aesculus hippocastanum: New York, New Jersey, Pennsylvania, Maryland, Virginia, Florida, Texas, West Virginia.

Guignardia bambusae Miyake & Hara (x) **bamboo culm disease**

Causes disease of culms of bamboo in Maryland. Known also in Japan.

Bambusa spp.: Maryland.

Guignardia camelliae (Cke.) Butl. (xxx) **tea copper blight**

Causes "copper blight" of tea leaves. Affected leaves assume a coppery sheen beneath and bend over with the under side outermost. Later yellow-brown patches form, turn gray, and become very brittle. Distributed in India, Ceylon, Java, Malaya, and Japan; also in North America in California on tea grown from seeds, where no other tea plants are known.

Camellia sinensis: California.

Gymnosporangium aurantiacum Chev. (xxx)
juniper-Sorbus rust

Heteroecious. Appears in summer as short tubules projecting from the lower surface of *Sorbus* leaves and containing brown dusty spores. These spores infect leaves and small stems of so-called Siberian juniper, producing slight swellings of infected stems. The next spring small, chocolate-brown, cushion-shaped fruiting bodies form

on the leaves, and the infected stems swell in moist weather and produce tiny spores that are blown to mountain-ash leaves to start a new cycle of development. The rust fungus is distributed over Europe, northern Africa, and Asia, as well as in North America from Greenland to New York and Wisconsin, and in the mountains of Wyoming, Colorado, and British Columbia.

Sorbus aucuparia: Connecticut, Michigan, New Jersey.

Gymnosporangium clavipes Cke. & Pk. (xxx) **juniper spindle rust**

Heteroecious. Affects fruits and stems of Pomaceae; forms crowded tubules containing pale yellow dusty spores. These spores infect small stems of junipers, causing slight tapering swellings. The next spring small cushion-shaped swellings form on the swollen juniper stems and give off spores, which are carried by the wind to begin a new cycle on Pomaceae. The fungus is North American, generally distributed from Mexico, Florida, and Texas, northward to British Columbia and east of the Rocky Mountains to Newfoundland.

Photinia villosa: Massachusetts.
Pyrus pyrifolia: Arkansas.

Gymnosporangium haraeanum Syd. (xxx) **juniper-pear rust**

Heteroecious. This rust fungus alternates between *Pyrus pyrifolia* leaves and needles of *Juniperus chinensis* L. Distributed widely in China, Japan, and Korea. Sporadic on Atlantic and Pacific coasts of North America on imported exotic plants.

Juniperus chinensis: (established on Pacific coast on foreign hosts only).
Pyrus pyrifolia: California, Oregon.

Gymnosporangium japonicum Syd. (xxx) **juniper-Photinia rust**

Heteroecious. General life history like that of *Gymnosporangium aurantiacum.* Alternates between leaves of *Photinia arbutifolia* Lindl. and stems of *Juniperus chinensis* L., where it causes fusiform swellings. It is native in eastern China and Japan. Sparingly sporadic on the Pacific coast but not on the Atlantic coast, although brought into the country at Boston, Mass., and New Haven, Conn., from Japan. The infected stock was destroyed.

Juniperus chinensis: On hosts established on Pacific coast.

Gymnosporangium libocedri (P. Henn.) Kern (xxx) **Libocedrus-Pomaceae rust**

Heteroecious. Alternates between leaves and fruits of Pomaceae and leaves of *Libocedrus.* The fungus fruits on the Pomaceae are cupulate rather than tubular. On *Libocedrus*, witches'-brooms may form but do not always do so. Native in southern Oregon and northern California. This rust might become destructive in other countries if it were introduced, since it lives on *Amelanchier*, *Crataegus*, *Chaenomeles*, *Cydonia*, *Malus*, *Pyrus*, and *Sorbus.*

Sorbus aucuparia: Oregon.

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Gymnosporangium nootkatense (Trel.) Arth. (xxx) **Alaska-cedar rust**

Heteroecious. Forms cup-shaped fruiting bodies on leaves of Pomaceae, containing pale-yellow dusty spores. These infect needles of Alaska-cedar, remain dormant over winter, and produce new spores when tree growth begins. Distributed in western North America from southeastern Alaska to northern Oregon. This rust may be a potential danger to closely similar species of Asian *Chamaecyparis*, although its strict limitation to *C. nootkatensis* here may indicate inability to attack other species.

Pyrus pyrifolia.

Helicobasidium purpureum (Tul.) Pat. (xxx) **damping-off**

Causes root rot and damping-off of coniferous and broad-leaved nursery plants. The usual form of the fungus is as a weft of grayish sterile mycelium on dead or dying plant roots, which is commonly called *Rhizoctonia solani*. Occasionally a purplish felty coating is formed at or near the soil surface. This bears reproductive spores and is known as *Helicobasidium purpureum*. The fungus is widely distributed in North America, Central America, Europe, Asia, Africa, and Australia.

Malvaviscus arboreus var. *drummondii:* Texas.
Melia azedarach: Texas.
Morus alba: Texas.

Helminthosporium beaumontii Sacc. (x) **leaf spot**

Causes leaf spot of *Viburnum opulus* in the United States.

Viburnum opulus: Alabama, Texas.

Helminthosporium heveae Petch (xxx) **birdseye leaf spot**

On round spots with purple-brown edges, 1 to 4 mm. in diameter, on *Hevea* leaves. Known in the Amazon region, Ceylon, and Indonesia; also in Florida.

Hevea brasiliensis: Florida.

Hendersonia eucalypticola A. R. Davis. (xxx) **Eucalyptus leaf blotch**

Causes irregular purplish-brown blotches, later with grayish-brown centers, on the lower surface of *Eucalyptus* leaves. Known only in California.

Eucalyptus globulus: California.

Hendersonia tini Ell. & Langl. (x) **Viburnum leaf spot**

Causes leaf spots of *Viburnum* 2 to 3 cm. across, ashy with purplish-red edges. Known only in Louisiana.

Viburnum tinus: Louisiana.

Herpobasidium deformans Gould (xxx) **Lonicera leaf blight**

Causes dying of first leaves in spring. Leaves turn brownish-black and are often rolled and twisted. On their lower surface a thin white layer of spores forms. The fungus is North American in distribution.

Lonicera morrowii: Iowa.
L. tatarica: Iowa.

Herpotrichia nigra Hartig (x) **brown felt blight**

Occurs at high elevations or in boreal regions where heavy snow lingers late in the spring. Young conifers especially are affected because their low branches are pressed down by snow close to the wet soil. Low temperatures and high humidity under melting snow favor the fungus so that it coats the twigs and needles with a gray to brown network of mycelium, which often kills the needles. Nurseries at high elevations have had to be abandoned. Found in northern boreal regions of the North Temperate Zone.

Picea abies: Colorado, Oregon, Wyoming.

Heterosporium spiraeae Syd. (x) **Spiraea leaf blight**

Causes dull brown, irregular, confluent spots on leaves of *Spiraea* spp. Reported in Austria; also in Alaska on cultivated *Spiraea*, possibly introduced with its host plant.

Spiraea spp.*:* Alaska.

Heterosporium syringae Oud. (x) **lilac leaf blight**

Causes large irregular gray-brown blotches on lilac leaves. Reported in New Jersey; widely distributed in Europe.

Syringa vulgaris: New Jersey.

Hymenochaete agglutinans Ell. (xxx) **girdling canker**

Wherever a dead sapling falls against a healthy tree, girdling canker forms a compact band of brown mycelium around the living tree. The band has yellowish edges and holds the trees firmly together until the second one is killed. The fungus is North American and occurs nowhere else except in Cuba.

Syringa vulgaris: Connecticut.

Hypoderma desmazierii Duby (xxx) **pine needle cast**

Appears as black, swollen spots mostly on the lower surface of the needles, about one and one-half times longer than wide. Affected needles turn red to brown, finally gray, and usually fall soon after reaching the gray stage. Young trees may be killed outright but usually are reduced in growth rate and vigor. Individual trees show resistance to this fungus, indicating possibilities for success in breeding and selection work. This disease is generally distributed in Europe, Asia, and North America.

Pinus griffithii: New Jersey.

P. nigra: New Jersey, New York.

P. sylvestris: Quebec.

Hypoderma lethale Dearn. (xxx) **hard pine gray blight**

Forms black swollen spots 2 to 3 times longer than wide on the needle surface. Diseased needles die at the tip and turn gray. An American fungus occurring from Maine to Florida, Louisiana, and Missouri.

Pinus nigra: Pennsylvania.

Hyponectria buxi (DC. ex Fr.) Sacc. (xx) **box blight**

Causes blight of box twigs with considerable damage. Distributed in Europe, in Belgium, England, France, Germany, Portugal, and Sweden. Reported in North America from New York.

Buxus sempervirens var. *suffruticosa:* New York.

Irene perseae (F. L. Stevens) Toro (x) **Persea black mildew**

Causes "black mildew" on avocado leaves. Known in Puerto Rico and in Florida.

Persea americana: Florida.

Kuhneola malvicola (Speg.) Arth. (xxx) **Malvaceae rust**

Autoecious. A cinnamon-brown, powdery rust on the lower leaf surface of *Hibiscus syriacus* and related malvaceous plants; in late summer or autumn the rust is followed by dark cinnamon-brown pustules. Distributed in the United States in Georgia, Alabama, Mississippi, Louisiana, and Texas, and in Central America, South America, and the West Indies.

Hibiscus syriacus: Gulf States.

Lembosia camphorae Earle (xxx) **camphor black spot**

Forms black spots on living leaves of camphor trees. Found only in Florida.

Cinnamomum camphora: Florida.

Leptosphaeria tini Ell. & Ev. (x) **Viburnum leaf spot**

On leaf spot of *Viburnum* in the United States.

Viburnum tinus: Louisiana.

Leptostromella elastica Ell. & Ev. (xxx) **Ficus leaf spot**

On large white spots with reddish-purple borders on leaves of *Ficus elastica.* Known in northeastern United States and in Tennessee.

Ficus elastica: Northeastern States, Tennessee.

Leptothyrium petiolorum (Cke. & Ell.) Sacc. (x) **hardwoods leaf spot**

Causes spot of petioles of hardwood leaves in the United States.

Ailanthus altissima: New Jersey, Ohio, West Virginia.

Leptothyrium pinastri Karst. (x) **hard pine leaf blight**

Causes blight of pine needles in North America and in Poland.

Pinus nigra: Missouri.

Lophodermium juniperinum (Fr.) de N. (x) **juniper needle cast**

Causes shiny black, raised, elongate crusts scarcely twice as long as wide on juniper needles, finally resulting in premature casting of affected needles. Distributed in temperate North America and in western Europe.

Juniperus chinensis: Massachusetts.

J. chinensis var. *sargentii:* Massachusetts.

J. excelsa: Connecticut, Oregon.

J. sabina: Washington.

Lophodermium nitens Darker (xxx) **white pine needle cast**

Causes shiny black, swollen, small crusts, one and one-half times longer than wide. Distributed in eastern United States and the Pacific Northwest.

Pinus griffithii: Georgia.

Lophodermium piceae (Fckl.) Hoehn. (xxx) **fir and spruce leaf cast**

Forms elliptical, shiny-black, thickened spots on needles of *Abies* and *Picea*, finally causing early defoliation where attacks are severe. It is distributed in eastern North America, Alaska, and the Pacific Northwest; also in central and western Europe and in India.

Picea abies: Massachusetts, Michigan.

Lophodermium pinastri (Schrad. ex Fr.) Chev. (xxx) **pine leaf cast**

Forms scattered, black, elliptical, thickened, small crusts, about twice as long as wide, on pine needles, causing the affected needles to fall prematurely. Occurs practically everywhere that pines grow in North America and Europe. It is also reported from Siberia, India, Japan, South Africa, and New Zealand.

Pinus armandii: Massachusetts.
P. koraiensis: Massachusetts.
P. mugo: Georgia, Illinois, Massachusetts.
P. nigra: Connecticut, Oregon.
P. parviflora: California, Massachusetts.
P. sylvestris: Georgia, Illinois, Maine, Massachusetts.
P. thunbergii: Maryland.

Marssonina martini (Sacc. & Ell.) Magn. (xxx) **oak leaf spot**

Causes leaf spots of white oaks, rounded, brownish, with narrow, purplish margins. Widely distributed in North America. Reported from China.

Quercus robur: Pennsylvania.

Marssonina ochroleuca (Berk. & Curt. ex Pk.) Lentz. (xxx) **chestnut leaf spot**

Causes circular, yellow to brown spots with concentric zones on chestnut leaves. Formerly was distributed practically everywhere in eastern North America that chestnut grew naturally. Apparently not known in the Old World.

Castanea mollissima: Maryland.
C. sativa: Massachusetts to South Carolina.

Marssonina truncatula (Sacc.) Magn. (xxx) **maple leaf spot**

Causes ochraceous leaf spots on leaves of several species of maple in Europe. Reported in New York.

Acer platanoides: New York.

Melampsora abietis-canadensis (Farl.) C. A. Ludwig (xxx) **hemlock-poplar rust**

Heteroecious. Forms powdery lemon-yellow pustules on hemlock needles, shoots, and cones, followed by an alternate stage in two forms

on poplar leaves. The earlier stage on poplar leaves develops the latter part of July or in August as powdery orange-yellow pustules followed by crustlike reddish-brown pads just beneath the epidermis of the leaf. Here the parasite overwinters, setting free in the spring tiny spores that blow about and infect new growth of hemlocks in the vicinity.

The fungus is known on eastern hemlock throughout most of its native range. The rust can live over winter on poplar and thus is capable of maintaining itself indefinitely on this host. It might be destructive in countries of Asia where *Tsuga* is native.

Populus alba: Pennsylvania.

Melampsora abieti-capraearum Tub. (xxx) **fir-willow rust**

Heteroecious. Causes powdery orange-yellow pustules on *Abies* needles. A few weeks later it appears on willow leaves as powdery orange-yellow pustules on the lower leaf surface of nearly all species of willow and still later as tiny brown pads under the leaf epidermis. It overwinters here and in the spring produces great numbers of new spores, which can infect *Abies* needles or willow leaves. Thus this rust is able to survive indefinitely on willow in a place where no *Abies* is present. Abundant in North America, south into Central and South America, and is in western Europe where it is not common.

Salix alba.

S. babylonica: Missouri, West Virginia.

S. fragilis.

S. viminalis: New York, Pennsylvania.

Melampsora aecidioides (DC.) Schroet. (xxx) **white poplar rust**

? Autoecious. Causes copious pulverulent golden-yellow rust of leaves of *Populus alba.* No alternate host is known. Lives over winter as spores hidden between bud scales of poplar. In North America it is common on the Pacific coast from Washington to central California; also found in Colorado and Rhode Island. It occurs in Europe, India, and South America.

Populus alba.

Melampsora bigelowii Thuem. (xxx) **larch-willow rust**

Heteroecious. Forms small, oblong, pale yellow, powdery pustules on larch needles followed by round, orange-yellow pulverulent pustules on willow leaves, and still later by subepidermal yellow crusts on the same leaves. These latter are the overwintering form of the fungus. Abundant in North Temperate Zones; apparently unknown south of the United States.

Larix decidua: Indiana, New York.

Salix alba: Kansas.

Melampsora occidentalis Jacks. (xxx) **Douglas-fir—poplar rust**

Heteroecious. Forms round or oblong orange-yellow pulverulent pustules on the lower surfaces of needles of Douglas-fir, followed by powdery orange-yellow pustules on the lower surfaces of the poplar leaves, followed in turn by small, waxy, light cinnamon brown crusts scattered or confluent about the preceding fruiting bodies. This latter form is the overwintering stage of the fungus. Distributed

from British Columbia and southern California, eastward to Wyoming.

Populus alba: California.

Melanconis juglandis (Ell. & Ev.) Graves (xxx) **Juglans dieback**

Causes dieback of all *Juglans* species; begins as twig dieback, later slowly extends into larger branches. Slow defoliation occurs. The disease is insidious, advancing imperceptibly until the branch or tree is killed. Distributed in eastern North America wherever butternut grows. Generally distributed in Europe.

Juglans ailantifolia: Connecticut, New York.

J. ailantifolia var. *cordiformis:* Connecticut, New Hampshire, New York.

J. regia: Connecticut, New Jersey.

Microsphaera alni DC. ex Wint. (xxx) **powdery mildew**

Causes white, floury mildew on the surface of leaves of many hardwoods. Distributed generally in North America and Europe; also reported in China and Chile. In 1907 this fungus appeared in western Europe and in a few years spread over the entire region doing much damage to oak coppice and young reproduction. For a number of years it did not form perfect fruits; finally, it did and was found to be practically the same as the American *Microsphaera alni*, which apparently had escaped to Europe.

Cassia acutifolia: Maryland.
Castanea sativa: Massachusetts, North Carolina.
Catalpa bungei: New Jersey.
Cinnamomum camphora: Louisiana.
Euonymus alatus: Nebraska.
E. japonicus: Mississippi, Texas.
Ligustrum spp.
Lonicera morrowii: New York.
L. tatarica.
Platanus ×acerifolia: New Jersey, New York.
P. orientalis.
Quercus robur: Kentucky.
Rhododendron spp.
Sophora japonica: Connecticut.
Spiraea spp.: Connecticut.
Syringa ×persica.
S. vulgaris.
Viburnum opulus: Texas, Wisconsin.

Microsphaera diffusa Cke. & Pk. (xxx) **powdery mildew**

Causes white powdery mildew on broadleaf species in North America; unknown elsewhere.

Bauhinia sp.: Maryland.
Lycium halimifolium.

Microstroma juglandis (Bereng.) Sacc. (xxx) **Juglans white mold**

Causes white mold on the lower side of *Juglans* leaves in North America and Europe.

Juglans regia.

Milesia fructuosa Faull (xxx) **fir-fern rust**

Heteroecious. Forms white, cylindric tubules on the current year's needles of *Abies*. Later it appears on fern leaves as white pustules. Still later it forms dark brown spots with spores within the fern epidermal cells. Little or no damage is done to the tree hosts. Limited to eastern North America. Has been confused with European species.

Abies cephalonica.

A. nephrolepis.

Monochaetia camelliae Miles (x) **Camellia leaf spot**

Causes leaf spot of *Camellia japonica* in Georgia and Mississippi. Not otherwise known.

Camellia japonica: Georgia, Mississippi.

Monochaetia desmazierii Sacc. (xxx) **hardwoods leaf blotch**

Causes large leaf blotch of hardwoods, especially oak and chestnut. North American, also reported from Japan.

Eucalyptus globulus: California.

Mycosphaerella aleuritidis Ou (xxx) **tung leaf spot**

Causes irregular leaf spots, 6 to 10 mm. in diameter, reddish to almost black. Known in North America, China, Japan, and Brazil. Possibly imported on chaff among seeds. Probably present wherever the host is grown.

Aleurites fordii.

Mycosphaerella bolleana Higgins (xxx) **Ficus leaf spot**

Causes brown leaf spots, from small spots up to large brown blotches. Known in the Gulf States of the United States, in Italy, Spain, and the Dominican Republic.

Ficus carica: North Carolina to Texas.

F. elastica: Georgia.

Mycosphaerella cercidicola Bunge (xxx) **redbud leaf spot**

Causes rounded leaf spots 1 to 6 mm. across, reddish brown, some with a pale center. In eastern United States, west to Missouri, northern West Virginia, and southern Illinois. Also reported in Japan.

Cercis chinensis: Connecticut, Kentucky, Maryland.

Mycosphaerella maculiformis (Pers. ex Fr.) Schroet. (xxx) **hardwoods leaf spot**

On leaf spot of many hardwoods. Distributed generally in North America and in Europe.

Populus alba: Georgia.

Mycosphaerella molleriana (Thuem.) Lindau (xxx) **eucalyptus leaf spot**

Causes irregular brown leaf spots on *Eucalyptus* spp. in California, Brazil, Portugal, and Algeria.

Eucalyptus globulus: California.

Mycosphaerella mori (Fckl.) Lindau (xxx) **Morus leaf spot**

Causes irregular pale brown blotches with red-brown margins on mulberry leaves in the United States, Canada, Europe, Japan, India, Uganda, and South America.

Morus alba: Georgia, Iowa, Texas.

Mycosphaerella perseae Miles (xxx) **Persea leaf blotch**

Causes large irregular leaf blotches of avocado, ashen above, brown below. Distributed in Florida, Puerto Rico, and Mexico.

Persea americana: Florida.

Mycosphaerella ulmi Kleb. (xxx) **elm leaf spot**

Causes leaf spot of elms in eastern North America and in Europe.

Ulmus procera: Connecticut, New York.

Naemacyclus niveus (Pers. ex Fr.) Sacc. (xx) **hard pine leaf cast**

Causes leaf cast of hard pines. Distributed in eastern and western North America, western Europe, and northern Africa.

Pinus nigra: Oregon.

P. sylvestris: Georgia, Massachusetts, Michigan.

Nectria cinnabarina Tode ex Fr. (xx) **hardwoods dieback**

In early summer this *Nectria* forms small pinkish cushionlike bodies breaking through the surface of affected bark. Later, groups of tiny, globular, cinnabar-red bodies, crowded closely together in groups, form on diseased bark. The fungus apparently has distinctly pathogenic strains although it lives mostly saprophytically. It is generally distributed in North America and Europe and is reported in Siberia, Ceylon, India, Japan, New Zealand, and Brazil. Aggressively pathogenic strains are likely to be received from remote lands.

Acer palmatum.
A. platanoides.
A. pseudoplatanus.
Ailanthus altissima.
Albizia julibrissin: District of Columbia, North Carolina, Virginia.
Broussonetia papyrifera: Alabama, New York.
Buxus sempervirens: Alabama.
Callicarpa dichotoma: Alabama.
Cotoneaster spp.: Connecticut.
Daphne spp.: New Jersey.
Elaeagnus angustifolia: California, Iowa.
Fagus sylvatica: Massachusetts.
Ficus carica: California, Texas.
Firmiana platanifolia: Oklahoma.
Hibiscus spp.: Massachusetts, Missouri, Ohio, Georgia.
Hydrangea paniculata: Virginia.
Indigofera spp.: Maryland.
Kerria japonica: New York, Oregon, Washington.
Koelreuteria spp.: California, Connecticut.
Laburnum anagyroides: Ohio.

Melia azedarach: California, Georgia, Gulf States, South Carolina.
Morus alba: (widespread).
Rhodotypos tetrapetala: Massachusetts.
Roystonea spp.: Florida.
Salix viminalis: Alaska.
Sophora japonica: Connecticut, New York.
Ulmus procera: Massachusetts, New Jersey, New York.
U. pumila: (widespread).

Nectria coccinea Pers. ex Fr. (xx) **hardwoods annual stem canker**

Causes annual bark lesions on stems of hardwood trees. Distributed over North America and Europe; reported from Brazil, Siberia, South Africa, Indonesia, and Tasmania.
Ailanthus altissima.
Albizia julibrissin: Georgia.
Cytisus spp.: Oregon.
Melia azedarach: Mississippi, South Carolina.
Morus alba: (widespread).

Nectria galligena Bres. (xx) **hardwoods perennial canker**

Many hardwoods bear large perennial cankers with greatly swollen, irregular callus edges. Distributed generally in North America and Europe. It also is reported in Japan, New Zealand, and Mexico.
Betula pendula: Pennsylvania.

Nummularia discreta (Schw.) Tul. (xx) **hardwoods blister canker**

Causes large bark lesions on large branches and stems of hardwood trees. It occurs throughout the apple region of the Mississippi Valley and eastward in North America; also in Europe.
Sorbus aucuparia: Iowa.

Oidium caricae Noack (xxx) **papaya powdery mildew**

Causes a white, powdery mildew on the upper leaf surface of papaya in Florida and Texas. Distributed southward in Central America, West Indies, and Peru; also reported in East Africa.
Carica papaya: Florida, Texas.

Oidium euonymi-japonici (Arcang.) Sacc. (xxx) **Euonymus powdery mildew**

Causes white powdery mildew in patches on leaves of *Euonymus.* Known in the Gulf States, China, Iran, and Japan; also in Europe and Argentina.
Euonymus japonicus: Louisiana, Mississippi.

Oidium obductum Ell. & Langl. (xxx) **powdery mildew**

Causes powdery mildew on leaves of hardwoods. Known only in North America.
Platanus orientalis: Pennsylvania, Virginia, West Virginia.

Omphalia pigmentata Bliss (x) **palm decline**

Causes decline of date palms in California. Not otherwise known.
Phoenix dactylifera: California.

Omphalia tralucida Bliss (x) **palm decline**

Causes decline of date palms in California. Not otherwise known.
Phoenix canariensis: California.
P. dactylifera: California.

Ophiobolus heveae Petch (x) **Hevea leaf spot**

Causes rounded, gray leaf spots on *Hevea* in Florida and Brazil.
Hevea brasiliensis: Florida.

Ormathodium fici Tims & L. Olive (xxx) **fig brown leaf spot**

Causes large brown leaf spots, somewhat concentrically zoned above and with a gray, fuzzy growth below. Distinctly parasitic. Known only on *Ficus carica* L. in Louisiana.
Ficus carica: Louisiana.

Papularia sphaerosperma (Pers. ex Lk.) Hoehn. (xx) **leaf spot**

Causes leaf and flower spots of broad-leaved trees and *Arundo* in the Gulf States and California; also reported in Great Britain and Java.
Arundo donax.
Camellia spp.

Papularia vinosa (Berk. & Curt.) Mason (xxx) **dieback**

Causes necrosis of bamboo culms and resulting dieback of leaves. Known in the United States, Cuba, and Africa.
Bambusa spp.: Texas.
B. vulgaris: Florida.
Phyllostachys bambusoides: Georgia.

Pellicularia filamentosa (Pat.) Rogers (xxx) **root rot**

Causes root rot and stem lesions of broad-leaved trees. Widely distributed in North, Central, and South America, Europe, South Africa, Asia, and Australia.
Aleurites fordii: Louisiana, Mississippi.
Caragana arborescens: North Dakota.
Hibiscus rosa-sinensis: Florida.

Pellicularia koleroga Cke. (xxx) **thread blight**

Causes bark lesions on branches, and leaf blight, by superficial mycelium creeping over surfaces in very moist localities. Widely distributed in the Tropics, both East and West. In Southern States of the United States.
Aleurites fordii: Florida, Louisiana, Mississippi, North Carolina.
A. montana: Florida, Louisiana, Mississippi.
Cinnamomum camphora: Louisiana.
Cocos nucifera: Florida.
Diospyros kaki: Florida.

Euonymus japonicus: Louisiana.
Ficus carica: Florida, Louisiana, Mississippi.
Hibiscus spp.: Florida.
Lagerstroemia indica: Louisiana.
Laurus nobilis: South Carolina.
Ligustrum spp.: Florida.
Lonicera japonica: Louisiana.
Melia azedarach: Florida, Louisiana.
Michelia fuscata: Louisiana.
Pistacia chinensis: Florida, Texas.
P. vera: Texas.
Rhododendron spp.: Louisiana.
Psidium guajava: Florida.
Punica granatum: Florida, Oklahoma.
Pyrus pyrifolia: Mississippi.
Rhododendron spp.: Louisiana.
Sapindus mukorossii var. *carinatus:* Florida.
Syringa vulgaris: Florida, Mississippi, North Carolina.
Viburnum opulus: Florida.
Ziziphus mauritiana: Florida.

Pellicularia rolfsii (Sacc.) E. West (xxx) **seedling blight**

Causes seedling blight of many tropical trees. Occurs mostly in the United States. It is also reported in Africa, Australia, China, India, Japan, and South America.
Aleurites fordii: Texas.
Anacardium occidentale: Florida.
Azara microphylla: California.
Carica papaya: Texas.
Daphne spp.: Florida.
Elaeagnus angustifolia: Texas.
Ficus carica: Florida.
F. pumila: Florida.
Forsythia spp.: Georgia.
Hydrangea paniculata: Florida, Texas.
Jasminum spp.: Florida.
Myrtus communis: Louisiana.
Persea americana: Florida.
Pittosporum spp.: Florida, Texas.
Raphiolepis indica: Florida.
Ricinus communis: Florida.
Salvia officinalis: Illinois.

Penicillium vermoeseni Biourge (xx) **palm canker**

Causes trunk canker of palms, entering injured leaf bases. Known only in California. Inoculations proved its pathogenesis.
Arecastrum romanzoffianum: California.
Phoenix canariensis: California.

Peridermium coloradense (Diet.) Arth. & Kern (xxx)
spruce witches'-broom rust

? Autoecious. Causes witches'-brooms with deciduous needles on spruces. Believed to be distinct from *Melampsora cerastii.* This

American fungus ranges from Newfoundland to Alaska, south through Canada to the northern United States, and extends south to central Mexico. Old World countries should be wary of receiving this fungus until its alternate hosts, if any, are known.

Picea abies: Montana, Washington, Manitoba.

Pestalotia cryptomeriae Cke. (x) **needle blight**

On blighted needles of *Cryptomeria.*

Cryptomeria japonica: South Carolina.

Pestalotia cycadis Allesch. (x) **cycad blight**

On leaves of *Cycas revoluta* in the United States and in Monaco.

Cycas revoluta: Connecticut, Florida.

Pestalotia decolorata Speg. (x) **leaf spot**

Associated with leaf spot of *Myrtus communis.* Known in the United States, Argentina, Cyprus, and Great Britain.

Myrtus communis: Louisiana.

Pestalotia funerea Desm. (x) **leaf spot**

Causes leaf spot and blight of many conifers and hardwoods. Distributed generally in North America, West Indies, Europe, Africa, Asia, and New Zealand.

Araucaria araucana: California.
Chamaecyparis spp. (foreign) : New Jersey, Texas.
Cryptomeria japonica: New Jersey.
Cupressus sempervirens: Texas.
Juniperus chinensis: New Jersey.
J. excelsa: New Jersey.
Picea abies: Massachusetts.
Pinus mugo: Pennsylvania.
P. sylvestris: (widespread).
Taxus spp. (foreign) : Massachusetts.
Thuja orientalis: (widespread).

Pestalotia guepini Desm. (xx) **leaf blight**

Causes leaf blight of many broad-leaved trees. Generally distributed in the United States, Europe, Asia, Africa, and in New Zealand and Peru.

Camellia japonica: (widespread).
C. sinensis: South Carolina.

Pestalotia macrotricha Kleb. (xx) **rhododendron leaf blotch**

Causes leaf blotch of *Rhododendron* and related trees. Generally distributed in the United States, Europe, and India.

Rhododendron spp.: (general).

Pestalotia mangiferae P. Henn. (x) **mango leaf spot**

Causes spot of living leaves of *Mangifera indica.* Reported in Florida where it may have been introduced on its host. Widely distributed in the Congo, India, Burma, and the Andaman Islands.

Mangifera indica: Florida.

Pestalotia palmarum Cke. (xx) **palm leaf spot**

Occurs on pale dead leaf spots of palms with definite reddish-brown edges. Very widely distributed where palms grow naturally outdoors. Reported in Florida and Pennsylvania; also in the West Indies, Central America, and northern South America in the New World. In the Old World Tropics generally. Apparently has accompanied the palms in their migrations for ages.

Arecastrum romanzoffianum: Florida, Pennsylvania.
Cocos nucifera: Florida.
Pandanus spp.: Florida.
Phoenix canariensis: Florida.

Pestalotia scirrofaciens N. A. Brown (xxx) **hard gall**

Causes hard woody galls on stems of *Achras zapota* in Florida and Texas. The only known occurrence of the pathogen.

Achras zapota: Florida, Texas.

Phakopsora cherimoliae (Lagh.) Cumm. (xxx) **Annona rust**

Forms powdery pale brownish pustules breaking the epidermis of leaves of *Annona.* Known in Florida and Texas; also in Cuba, Yucatan, and South America. Probably introduced into Florida and Texas.

Annona cherimola: Florida.
A. squamosa: Florida, Texas.

Phakopsora desmium (Berk. & Br.) Cumm. (xxx) **cotton rust**

Causes slightly pulverulent, brownish-yellow pustules breaking through the epidermis, followed later by light cinnamon-brown granular spore pustules. Reported in southern Florida, where it may be a recent introduction. Distributed in West Indies, South America, India, Java, New Guinea, and the Philippines.

Gossypium arboreum: Florida.
G. barbadense: Florida.
G. hirsutum: Florida.

Phakopsora jatrophicola (Arth.) Cumm. (xxx) **Jatropha rust**

Appears as pulverulent yellowish pustules on the lower surface of *Jatropha* leaves. Reported in Texas, Mexico, Central America, West Indies, and South America.

Jatropha curcas: Texas.

Phakopsora zizyphi-vulgaris (P. Henn.) Diet. (xxx) **Ziziphus rust**

Forms pulverulent yellowish pustules on the lower surface of jujube leaves. Later a crustlike layer in the outer cell layer is formed. Reported in southern Florida where it may have been recently introduced from abroad. Distributed in India, Formosa, and Japan.

Ziziphus jujuba: Florida.

Phleospora multimaculans Heald & Wolf (xx) **Juglans leaf blotch**

On chestnut-colored leaf spot of *Juglans* enlarging to the entire leaf surface. Reported from Texas and Argentina.

Juglans regia: Texas.

Phoma mariae G. W. Clint. (xxx) **Lonicera dieback**

Causing stem lesions on *Lonicera* and resultant dieback. Reported only in Massachusetts, New York, and Wisconsin.

Lonicera japonica: New York.

L. tatarica: Massachusetts.

Phoma piceina Pk. (x) **spruce needle blight**

Associated with decadence and yellowing of spruce needles with formation of very small fungus pustules and shedding of affected needles.

Picea abies: District of Columbia, New York.

Phomopsis cinerascens (Sacc.) Trav. (xx) **fig canker**

Causes large cankers of branches of fig trees, girdling and destroying them. Distributed in the United States, Italy, France, Great Britain, and Brazil.

Ficus carica: California, Maryland.

Phomopsis gardeniae Hansen & Barrett (xxx) **gardenia canker**

Causes stem cankers and galls of *Gardenia* damaging the plants. Widely spread in the United States and known in Europe.

Gardenia jasminoides: California.

Phomopsis heveae (Petch) Boed. (xxx) **Hevea seedling dieback**

Causes dieback of twigs and seedlings of *Hevea* in Florida, Java, and Ceylon.

Hevea brasiliensis: Florida.

Phomopsis imperialis (Sacc. & Roum.) Grove (xxx) **Paulownia stem canker**

Causes seedling canker in Japan and twig canker in New York.

Paulownia tomentosa: New York.

Phomopsis japonica (Sacc.) Trav. (x) **Kerria twig blight**

Causes twig blight of *Kerria.* Distributed in North America from Texas to Connecticut and in Europe.

Kerria japonica: New Jersey, Ohio, Texas, Connecticut.

Phomopsis juglandina (Fckl.) Hoehn. (xxx) **Juglans canker**

Causes cankers of bark on branches. Reported in California in 1944, its first discovery in North America. Widely distributed in Europe.

Juglans regia: California.

Phomopsis juniperovora Hahn (xxx) **cedar blight**

Causes annual cankers of cedar stems and twigs, often leading to death of the entire plant. It has been very destructive and is essentially a nursery disease of Cupressaceae from Oklahoma to Texas, and eastward to the Atlantic coast. It is reported from Mozambique and The Netherlands (stock imported from France). This pathogen is a serious potential threat to its known hosts in the Old World and even in Mexico and southward.

Chamaecyparis spp.: Kansas, North Carolina.
Cupressus sempervirens: North Carolina.
Juniperus chinensis: Texas.
J. excelsa: (resistant).
J. sabina: Massachusetts, New York.
Thuja orientalis.

Phomopsis malvacearum West. (x) **Malvaceae stem lesion**

Causes lesions on branches of numerous *Malvaceae* in the United States, Europe, Siberia, and North Africa.

Hibiscus spp.: Maryland.

Phomopsis oblonga (Desm.) Hoehn. (x) **elm bark lesion**

Causes bark lesions of *Ulmus* in Europe, and in the United States.

Ulmus procera: Massachusetts, South Carolina.

Phyllachora fusicarpa Seaver (xxx) **tar spot**

Causes irregular, black, tarlike spots on leaves and serious defoliation of *Duranta repens.* Reported in the Bahamas, Haiti, Puerto Rico, Venezuela, and Florida. The latter occurrence is probably due to importation from some West Indian source.

Duranta sp.: Florida.

Phyllachora swieteniae Petr. & Cif. (xxx) **mahogany tar spot**

Causes tarlike, black spots on leaves of *Swietenia mahagoni.* Known in San Domingo in 1932. Later reported in Florida, the second known collection of the fungus and the first for Florida.

Swietenia mahagoni: Florida.

Phyllactinia corylea Pers. ex. Karst. (xxx) **hardwoods powdery mildew**

Causes a white, powdery coating on the lower leaf surface of many broadleaf trees in the North Temperate Zone. Results in defoliation. Generally distributed in North America, Europe, and Asia; reported in Argentina and Madagascar.

Berberis vulgaris: Massachusetts, Vermont.
Castanea sativa: Ohio.
Corylus maxima: Oregon, Washington.
Lagerstroemia indica: Alabama.
Melia azedarach: Mississippi.
Ulmus procera: North Carolina.

Phyllosticta ailanthi Sacc. (xxx) **Ailanthus leaf spot**

Causes irregular, pale yellow spots with reddish margins on *Ailanthus* leaves. Reported in the United States and Italy.

Ailanthus altissima: Virginia.

Phyllosticta alcides Sacc. (xxx) **poplar leaf spot**

Causes whitish, rounded spots 3 to 4 mm. in diameter on leaves of *Populus*. Described in Italy in 1878. Found in North America in Ohio in 1902, and in Idaho.

Populus alba: Ohio.

Phyllosticta andromedae West. (xxx) **leaf spot**

Causes leaf spot of *Pieris japonica*. Reported in New Jersey and in Poland.

Pieris japonica: New Jersey.

Phyllosticta apicalis Davis (xxx) **willow leaf blotch**

Causes brown blotch of the distal end of willow leaves. Known only in the United States.

Salix alba: Kansas.

Phyllosticta argyrea Speg. (xxx) **Elaeagnus leaf spot**

Causes leaf spot of *Elaeagnus* in the United States, Europe, and South America.

Elaeagnus angustifolia: North Carolina.

Phyllosticta auerswaldii Allesch. (xxx) **box leaf spot**

Causes leaf spot of *Buxus sempervirens*. Reported in New Jersey and in Germany.

Buxus sempervirens var. *arborescens:* New Jersey.

Phyllosticta azedarachis Thuem. (xxx) **Melia leaf spot**

Causes spots on leaves of *Melia azedarach* in Alabama and in Italy.

Melia azedarach: Alabama.

Phyllosticta betulina Sacc. (xxx) **birch leaf spot**

Causes leaf spot of *Betula* in the United States and Europe.

Betula pendula: New York.

Phyllosticta cajani Rangel (xxx) **Cajanus leaf spot**

Causes leaf spot of *Cajanus* in Florida and in India and Brazil.

Cajanus cajan: Florida.

Phyllosticta camelliae West. (xxx) **Camellia leaf spot**

Causes a large, rounded, up to 25 mm. wide, white leaf spot with a narrow red border. Distributed in the southeastern United States and in Europe from Great Britain to Denmark, France, The Netherlands, Belgium, Germany, and Austria. Also reported from Japan.

Camellia japonica: Southeastern United States.

Phyllosticta caricae-papayae Allesch. (xxx) **papaya leaf spot**

Causes leaf spot and "shot hole" of infected leaves of papaya. Reported in the United States, India, South Africa, and Brazil.

Carica papaya: Florida.

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Phyllosticta castaneae Ell. & Ev. (xxx) **chestnut leaf spot**

Causes round, pale yellowish-white spots of *Castanea* leaves, 2 to 5 mm. across, surrounded by rusty red areas blending with the healthy green tissue. Reported from Pennsylvania, New Jersey, and Maryland southward to West Virginia, and in Texas.

Castanea sativa: Texas.

Phyllosticta deutziae Ell. & Ev. (xxx) **Deutzia leaf spot**

Occurs on light brown to whitish, round spots 1 to 2 mm. in diameter, on *Deutzia* leaves in the United States.

Deutzia sp.: Iowa, New Jersey.

Phyllosticta discincola Ell. & Ev. (xxx) **Forsythia leaf spot**

Causes grayish-brown, 1 to 3 mm. in diameter, rounded leaf spots with raised borders in the United States.

Forsythia spp. (foreign): Maryland.

Phyllosticta dracaenae P. Henn. (xxx) **Dracaena leaf spot**

Causes large irregular spots on leaves of *Dracaena* in France. Reported in Pennsylvania and Ohio, usually on conservatory plants.

Cordyline spp.: Ohio, Pennsylvania.

Phyllosticta draconis Berk. (xxx) **Dracaena leaf spot**

Causes irregular, pale brown spots with purple margins, on leaves of *Dracaena* spp. Damaging to plants in conservatories. Distributed in the United States, Great Britain, Finland, France, and Portugal.

Dracaena spp.: Pennsylvania.

Phyllosticta euonymella Sacc. (xxx) **Euonymus leaf spot**

Occurs on angular, olive leaf spots of *Euonymus* spp. Distributed in the United States and Europe.

Euonymus fortunei: Oklahoma.

E. japonicus: Mississippi, Texas, Virginia.

Phyllosticta extensa Sacc. & Syd. (xxx) **Eucalyptus leaf blotch**

Causes irregular thickened and yellowish blotch of *Eucalyptus* leaves in California.

Eucalyptus globulus: California.

Phyllosticta gallarum Thuem. (xxx) **Caragana leaf spot**

Occurs on living leaves of *Caragana arborescens.* Reported in Alaska and Wisconsin, also Siberia.

Caragana arborescens: Alaska, Wisconsin.

Phyllosticta ginkgo Brun. (xxx) **Ginkgo leaf spot**

Occurs on irregular ashen spots with dark reddish-brown edges. Reported in North America, France, and Russia.

Ginkgo biloba: Indiana, Maryland, Ohio, Pennsylvania, Virginia.

Phyllosticta heveae Zimm. (xxx) **Hevea leaf spot**

Causes light yellowish-brown areas on *Hevea* leaves on young trees in shaded nurseries. Distributed in Florida, Malaya, Indonesia, India, Ceylon, Congo, Uganda, Philippines, and Brazil.

Hevea brasiliensis: Florida.

Phyllosticta hibiscina Ell. & Ev. (xxx) **Hibiscus leaf spot**

Occurs on irregular, large gray spots on leaves of *Hibiscus.* The dead centers fall out. Known in the United States, India, and Puerto Rico.

Hibiscus mutabilis: Louisiana, Massachusetts, Oklahoma.

H. syriacus: Oklahoma.

Phyllosticta juglandina Sacc. (xxx) **Juglans leaf spot**

Causes whitish spots with dull brown edges on leaves of *Juglans.* Reported in Oregon, and in Italy and Portugal.

Juglans regia: Oregon.

Phyllosticta lagerstroemiae Ell. & Ev. (xxx) **crapemyrtle leaf spot**

Occurs on terminal yellowish spots on leaves of *Lagerstroemia* in the United States.

Lagerstroemia indica: Louisiana, Texas.

Phyllosticta lentisci (Pass.) Allesch. (xxx) **Pistacia leaf spot**

Causes small ashen spots on *Pistacia* leaves. Reported in Texas, Italy, and Yugoslavia.

Pistacia vera: Texas.

Phyllosticta melaleuca Ell. & Ev. (xxx) **elm leaf spot**

Causes irregularly shaped, grayish-brown, elm leaf spots, 2 to 4 mm. and up to 1 cm. across. Apparently limited to North America. Might be undesirable if once established in Europe.

Ulmus procera: Vermont.

Phyllosticta meliae Ell. & Ev. (xxx) **Melia leaf spot**

Causes narrow marginal spots, whitish with a narrow brown border, on *Melia* leaves in southern United States.

Melia azedarach: Louisiana, Texas.

Phyllosticta micropuncta Cke. (xxx) **avocado leaf spot**

Causes rounded, brownish to cinereous spots with dark brown border, 1 cm. in diameter, on avocado leaves. Reported in Alabama, District of Columbia, Florida, Louisiana, and Texas.

Persea americana: Alabama.

Phyllosticta minima (Berk. & Curt.) Ell. & Ev. (xxx) **maple leaf spot**

Causes rounded spots on maple leaves, up to 5 mm. across, yellowish with reddish or purplish borders. Apparently limited to North

America. Common wherever maples grow. *Acer rubrum* is most susceptible and sometimes severely attacked. Might be undesirable or destructive in Europe if it once becomes established there.

Acer palmatum: Connecticut.
A. platanoides: Maine to Virginia and Missouri.
A. pseudoplatanus: Connecticut, Pennsylvania.

Phyllosticta mortoni Fairm. (xxx) **mango leaf spot**

Occurs on small, angular leaf spots of mango, black, becoming whitish with purplish halo. Distributed in the Gulf States, Mexico, El Salvador, and the Bahamas.

Mangifera indica: Florida, Texas.

Phyllosticta nerii West. (xxx) **oleander leaf spot**

Causes large, terminal, ashy-gray leaf spots of oleander. Reported from Michigan to Florida and Louisiana in North America. Distributed in Europe.

Nerium oleander: Florida, Louisiana, Michigan, Mississippi.

Phyllosticta oleae Ell. & G. Martin (xxx) **leaf spot**

Occurs on large, gray, marginal leaf spots of *Osmanthus*. Known in North America in Florida and Texas.

Osmanthus ilicifolius: Florida, Texas.

Phyllosticta opacae Ell. & Ev. (xxx) **holly leaf spot**

Causes marginal or terminal, irregular, holly leaf spots, dirty-white with slightly raised brownish rim. Distributed in North America in California, New York to West Virginia, South Carolina, and Texas. This fungus might be damaging in Europe if established there.

Ilex spp.: California.

Phyllosticta osmanthi Tassi (xxx) **Osmanthus leaf spot**

Occurs on dirty-white leaf spots with drab edges on *Osmanthus*. Reported in North America and in Italy.

Osmanthus ×*fortunei:* Louisiana.

Phyllosticta pallens Ell. & Ev. (xxx) **Euonymus leaf spot**

Occurs on marginal, whitish leaf spot of *Euonymus*, with narrow very dark purple margin, up to a diameter of 1 cm. Known only in the United States in Indiana, Alabama, and Texas.

Euonymus europaeus: Alabama.

Phyllosticta paulowniae Sacc. (xxx) **Paulownia leaf spot**

Occurs on variable leaf spots of *Paulownia;* large, ochraceous, rounded, with sinuous margins and a very narrow brown edge. Reported in North America. Distributed in Europe in Great Britain, France, Germany, and Italy.

Paulownia tomentosa: Alabama, Maryland, New York, Oklahoma.

Phyllosticta pseudocapsici Roum. (xxx) **Jerusalem cherry leaf spot**

Occurs on yellowish leaf spots, sometimes marginal, on leaves of Jerusalem cherry. Reported in the United States in Louisiana; known in Europe in France only.

Solanum pseudocapsicum: Louisiana.

Phyllosticta punctata Ell. & Dearn. (xxx) **Viburnum leaf spot**

Causes small, irregular leaf spots coalescing into whitish patches that break out leaving holes 0.5 to 1.0 mm. across. Apparently, entirely North American in distribution.

Viburnum opulus: Iowa and Wisconsin; Ontario, Can.

Phyllosticta rhamni West. (xxx) **Rhamnus leaf spot**

Occurs on ochraceous spots with a brown marginal line on *Rhamnus* leaves. Distributed in Wisconsin, and in Europe in Great Britain, Belgium, Germany, Italy, and Portugal.

Rhamnus cathartica: Wisconsin.

Phyllosticta rhododendri West. (xxx) **Rhododendron leaf spot**

Occurs on rusty-fuscous, marginal leaf spots of cultivated rhododendrons. Distributed in eastern United States and in Europe.

Rhododendron obtusum: Georgia, Louisiana, South Carolina.

Phyllosticta roberti Boyer & Jacz. (xxx) **Ficus leaf spot**

Causes large whitish leaf spots on *Ficus elastica* surrounded with alternate light and dark concentric bands, up to 2.5 cm. across. Reported in the United States, Europe, India, and the Bahamas.

Ficus elastica: Florida.

Phyllosticta saccharina Ell. & G. Martin (xxx) **maple leaf spot**

Causes minute, white spots on maple leaves surrounded by a brownish border. Known in the United States in Iowa, Missouri, New York, and Washington.

Acer platanoides: Missouri.

Phyllosticta sinuosa Ell. & G. Martin (xxx) **Osmanthus leaf spot**

Occurs on circular, whitish spots, 4 to 5 mm. across, with raised brownish border, on leaves of *Osmanthus*. Limited to North America.

Osmanthus ilicifolius: Florida, Mississippi, and Texas.

Phyllosticta sorbi West. (xxx) **Sorbus leaf spot**

Occurs on ashen leaf spots with dark purple edges on *Sorbus* spp. Reported in North America and in Europe in Great Britain, Belgium, and Portugal.

Sorbus aucuparia: Iowa, Missouri.

Phyllosticta stillingiae Ell. & Ev. (xxx) **Sapium leaf spot**

Causes rusty-brown leaf spots with darker border on *Sapium sebiferum* in Louisiana. Not otherwise known.

Sapium sebiferum: Louisiana.

Phyllosticta syriaca Sacc. (xxx) **Hibiscus leaf spot**

Occurs on sinuous leaf spots, whitish, later brown, on *Hibiscus syriacus*. Reported in Italy and Portugal.

Hibiscus syriacus: New York.

Phyllosticta taxi Hollós (xxx) **Taxus leaf spot**

Occurs on ochraceous spots on *Taxus* needles. Reported in Virginia on cultivated yew. Known also in Hungary.

Taxus baccata: Virginia.

Phyllosticta terminalis Ell. & G. Martin (xxx) **Forsythia leaf spot**

Causes marginal, brown to whitish leaf spots of *Forsythia*, with black borders. Known only in North America.

Forsythia spp.: Florida, New Jersey, New York, Texas.

Phyllosticta tinea Sacc. (xxx) **Viburnum leaf spot**

Occurs on rounded to irregular, gray-white leaf spots of *Viburnum*. Reported in the United States, Italy, and Great Britain.

Viburnum davidii: Maryland.

Phyllosticta wistariae Sacc. (xxx) **Wisteria leaf spot**

Causes ochraceous spots on *Wisteria* leaves. Known in the United States, and in Europe, Italy and France.

Wisteria spp.: Massachusetts, Missouri, New Jersey, Texas.

W. sinensis: Texas.

Phymatotrichum omnivorum (Shear) Dug. (xxx) **root rot**

Causes rotting of roots of woody plants as well as herbs. Dead roots usually have a tangled weft of mycelium running over the outer bark. On it may be small dark-colored sclerotia. This disease is limited to North America and to an area of calcareous soil of a peculiar type. Environment controls the action of the pathogen, as it attacks the most varied plants within infected areas, comparatively few being immune.

Abelia chinense: Texas.
Acanthopanax sieboldianus: Texas.
Achras zapota: Texas.
Aesculus hippocastanum: Texas.
Ailanthus altissima: Arizona, Texas.
Aleurites fordii: Texas.
Alnus glutinosa: Texas.
Annona squamosa: Texas.
Araucaria angustifolia: Texas.
Berberis thunbergii: Texas.
B. vulgaris: Texas.
Broussonetia papyrifera: Texas.
Buxus sempervirens var. *arborescens:* Texas.
Caesalpinia gilliesii: Texas.
Cajanus cajan: Texas.
Caragana arborescens: Texas.
Carica papaya: Texas.

Carissa grandiflora: Texas.
Cassia artemisioides: Texas.
Castanea sativa: Texas.
Ceratonia siliqua: Texas.
Chamaecyparis spp.: Texas.
Cinnamomum camphora: Texas.
Codiaeum variegatum: Texas.
Cotinus coggygria: Texas.
Cotoneaster spp.: Arizona, Texas.
Cupressus sempervirens: Arizona, Texas.
Doxantha unguis-cati: Texas.
Elaeagnus angustifolia: Oklahoma, Texas.
Eucalyptus camaldulensis: Texas.
Euonymus japonicus: Arizona, Texas.
Euphorbia milii: Arizona.
E. pulcherrima: Arizona, Texas.
Feijoa sellowiana: Texas.
Firmiana platanifolia: Texas.
Forsythia spp.: Texas.
Gardenia jasminoides: Texas.
Ginkgo biloba: Texas.
Grevillea sp.: Arizona.
Hedera helix: Texas.
Helianthemum nummularium: Texas.
Hibiscus syriacus: Texas.
Hydrangea paniculata: Texas.
Indigofera spp.: Texas.
Jacaranda acutifolia: Texas.
Juglans regia: Texas.
Juniperus chinensis: Texas.
Kerria japonica: Texas.
Koelreuteria spp.: Texas.
Lagerstroemia indica: Texas.
Ligustrum spp.: Arizona, Oklahoma, Texas.
Lonicera morrowii: Texas.
L. tatarica: Texas.
Maackia amurensis: Texas.
Mangifera indica: Texas.
Manihot esculenta: Texas.
Melia azedarach: Arizona, Texas.
Morus alba: Arizona, Oklahoma, Texas.
Nandina domestica: Texas.
Nerium oleander: Texas.
Nicotiana glauca: Texas.
Oncoba spinosa: Texas.
Osmanthus ilicifolius: Texas.
Parkinsonia spp.: Arizona, Texas.
Parthenium argentatum: Arizona, Texas.
Paulownia tomentosa: Texas.
Persea americana: Texas.
Phoenix dactylifera: Arizona, California.
Photinia serrulata: Texas.
Pistacia chinensis: Texas.

Pistacia vera: Texas.
Pittosporum spp.: Texas.
Plumeria spp.: Texas.
Populus alba: Texas.
Psidium guajava.
Punica granatum: Texas.
Pyracantha coccinea: Texas.
Quercus cerris: Texas.
Ricinus communis: Texas.
Sapium sebiferum: Texas.
Schinus molle: Arizona, Texas.
S. terebinthifolia: Texas.
Sophora davidii: Texas.
S. japonica: Texas.
Spiraea spp.: Arizona, Texas.
Syringa amurensis: Texas.
S. ×chinensis: Texas.
S. vulgaris: Arizona, Texas.
Tamarix spp.: California, Texas.
Thuja orientalis: Texas.
Ulmus pumila: Arizona, Oklahoma, Texas.
Vitex agnus-castus: Texas.
Weigela spp.: Texas.

Physalospora abdita (Berk. & Curt.) N. E. Stevens (x) **broadleaf twig blight**

Causes leaf and twig blight of many woody broad-leaved plants. Distributed in Atlantic and Gulf States from North Carolina to Mississippi; also in Cuba, Hawaii, and Uganda.

Cassia spp.: Florida, Mississippi.
Cocos nucifera: Florida.
Ficus carica: Alabama, Florida.
Hibiscus spp.: Florida.
Mangifera indica: Florida.
Manihot esculenta: Florida.
Melia azedarach: Georgia.
Persea americana: Florida.
Rhododendron spp.: North Carolina.
Ricinus communis: Florida.

Physalospora dracaenae Sheld. (x) **Dracaena tip blight**

Causes tip blight of lower leaves. Diseased areas are shrunken and straw colored. Apparently known only in West Virginia.

Dracaena fragrans: West Virginia.

Physalospora glandicola (Schw.) N. E. Stevens (xxx) **oak twig blight**

Causes twig blight, mostly of oaks. Distributed in eastern North America. A possible threat to Old World oaks if once established there.

Quercus robur: Ohio.

Physalospora ilicis (Schleich. ex Fr.) Sacc. (xxx) **holly leaf blight**

Causes blight of *Ilex* leaves, killing the entire plants when attacks are severe.

Ilex aquifolium: California, New Jersey, Washington.
I. crenata: Georgia, New Jersey.

Physalospora latitans Sacc. (xxx) **Eucalyptus dieback**

Attacks leaves and twigs, causing dieback of *Eucalyptus* spp. in Portugal and Brazil. Reported on *E. globulus* in California and Florida.

Eucalyptus globulus: California, Florida.

Physalospora miyabeana Fukushi (xxx) **willow black canker**

Causes elliptical stem lesions 5 to 30 mm. long with black borders. These usually develop in wet weather on young willow stems with thin bark. The infected bark usually is darker than normal green bark. Pink spore masses form with continued high humidity and are followed by black overwintering pustules in the bark. Often occurs on the same trees as *Fusicladium saliciperdum* but a little later in the development of new shoot growth. Compare statement under *F. saliciperdum*. Distributed in eastern North America from West Virginia northward to Nova Scotia, Quebec, and British Columbia; also in Japan and Europe.

Salix alba: Connecticut.
S. babylonica: West Virginia.

Physalospora obtusa (Schw.) Cke. (x) **hardwoods canker**

Causes stem and branch canker of many broad-leaved trees, resulting in dieback. Cankers appear as dead bark lesions with the bark at first smooth and tight on the underlying wood. They increase in area. The dead bark becomes rough and the outer bark scales are shed. Widely distributed in North America. Generally distributed in Europe. Reported in Australia, South Africa, and New Zealand.

Ailanthus altissima: Kansas, Michigan, New York.
Broussonetia papyrifera: Alabama, Maryland, Oklahoma.
Callicarpa dichotoma: South Carolina.
Carissa grandiflora: Florida.
Corylus avellana: California.
Cotinus coggygria: Georgia.
Cotoneaster spp.: New York to Ohio and Texas.
Cytisus spp.: Alabama.
Ficus carica: Alabama, Florida.
Genista spp.: New Jersey, New York.
Hedera helix: Maryland.
Hibiscus spp.: Florida.
Ilex spp.: California.
Jasminum spp.: Alabama.
Koelreuteria spp.: Maryland.
Lagerstroemia indica: Alabama, Florida.
Ligustrum spp.: Alabama, Virginia.

Lonicera japonica: Louisiana, Mississippi.
Melia azedarach: Alabama, Florida, Georgia.
Morus alba: Eastern States.
Nerium oleander: Georgia.
Paulownia tomentosa: Maryland.
Pinus griffithii: Pennsylvania.
P. nigra: Connecticut, Indiana.
Pistacia chinensis: Georgia.
Populus alba: New York, Virginia.
Pouteria spp.: South Carolina.
Pyracantha coccinea: Alabama.
Pyrus pyrifolia: Mississippi.
Rhododendron spp.: Mississippi.
Ricinus communis: Alabama.
Salix babylonica: Georgia.
Sorbus aucuparia: Indiana, Ohio.
Spiraea spp.: Georgia.
Syringa vulgaris: Massachusetts to Virginia and Ohio.
Wisteria spp.: New York, South Carolina.

Physalospora rhodina (Berk. & Curt.) Cke. (xx)
dieback, root rot

Causes root rot, canker, and dieback of branches of many tropical and subtropical trees. It usually is not a virulent pathogen but obtains entry through wounds. It has gone under numerous names. Apparently it causes most trouble in the Tropics, since much attention has been given to it practically throughout tropical regions. It is found in the United States in New York, Iowa, and from North Carolina to Louisiana and Texas; in Mexico, the West Indies, and in South America in Brazil and Colombia; also in Europe, Africa, Asia, and Australia.

Ailanthus altissima: Texas.
Albizia julibrissin: Florida.
Aleurites fordii: Florida, Louisiana, Mississippi, Texas.
Annona squamosa: Texas.
Cajanus cajan: Florida.
Carissa grandiflora: Florida.
Cassia spp.: Florida, Mississippi.
C. artemisioides: Texas.
Cinnamomum camphora: Mississippi.
Cocos nucifera: Florida.
Dracaena spp.: Maryland.
Eucalyptus globulus: Georgia.
Ficus carica: Alabama, Florida, Texas.
F. elastica: Georgia.
Kalanchoë pinnata: Alabama.
Mangifera indica: Florida.
Manihot esculenta: Florida.
Melia azedarach: Georgia.
Parthenium argentatum.
Persea americana: Florida.
Phoenix canariensis: Florida.
Pittosporum spp.: Florida.

Rhododendron spp.: North Carolina.
Ricinus communis: Alabama, Florida.
Tilia cordata: District of Columbia.
T. europaea: District of Columbia.
T. platyphyllos: District of Columbia.

Physopella fici (Cast.) Arth. (xxx) **fig rust**

Causes cinnamon-brown powdery rust on lower surfaces of fig leaves. Known in North America from North Carolina southward and westward in the coastal States to Texas. Also in Salvador and West Indies and in tropical regions of the world.

Ficus carica: North Carolina to Florida and Texas.

Phytophthora cactorum (Leb. & Cohn) Schroet. (xxx) **crown canker**

Causes bleeding canker of hardwoods near the root crown. Fissures in the living bark exude a brown or reddish liquid coming from cavities in the bark. Distributed in temperate and subtropical regions.

Acer platanoides: Connecticut, Massachusetts, New Jersey, New York, Rhode Island.
A. pseudoplatanus: Rhode Island.
Aesculus hippocastanum: Rhode Island.
Caragana arborescens: Missouri.
Cedrus deodara.
Ceratonia siliqua: California.
Colutea arborescens: Missouri.
Daphne spp.: California.
Elaeagnus angustifolia: Illinois, Wyoming.
Eucalyptus spp.
Fagus sylvatica: Massachusetts, New York, Rhode Island.
Hakea sp.
Hibiscus rosa-sinensis: Louisiana.
H. schizopetalus: Louisiana.
Juglans ailantifolia.
J. regia: California.
Juniperus procera.
J. sabina: California.
Kalanchoë laciniata: New Jersey, New York.
Persea americana: California.
Pinus nigra.
P. sylvestris: Minnesota.
Psidium guajava.
Salix babylonica.
Syringa vulgaris: Iowa, Maryland, Massachusetts, Minnesota, New Jersey.

Phytophthora cambivora (Petri) Buis. (x) **inky root rot**

Causes root rot of hardwoods, accompanied by exudations of inky fluid from affected roots. Affected trees wilt and die after 2 or 3 years' sickness. In North America the inky disease is reported in New Jersey and Rhode Island on *Acer.* Has caused heavy losses in

France, Italy, Portugal, and Spain. In recent years death from this disease has been confused with that from *Phytophthora cinnamomi* and *Endothia parasitica.*

Acer platanoides: New Jersey.

Phytophthora cinnamomi Rands (xxx) **root crown canker**

Causes basal canker, especially of maples and rhododendrons. Much like *Phytophthora cambivora.* Reported in many of the States of United States. Distributed in Australia, Hawaii, Puerto Rico, and Sumatra. Probably more prevalent than is definitely known. Apparently has been carried on nursery stock.

Aleurites fordii: Louisiana.
Betula pendula: Maryland.
Camellia japonica.
Castanea crenata: Georgia, Louisiana.
C. henryi.
C. mollissima: Georgia, Louisiana.
C. sativa: Georgia, Louisiana.
C. seguinii.
Cedrus deodara: California.
Cupressus sempervirens: California.
Erica spp.: California, New York.
E. subdivaricata: California.
Juglans regia: Maryland.
Larix decidua: Maryland.
L. leptolepis: Maryland.
Myrtus communis: California.
Persea americana: California.
Picea abies: Maryland, Virginia.
Pinus canariensis: California.
P. sylvestris: Maryland, Virginia.
Platanus orientalis: Maryland.
Rhododendron spp.
Taxus baccata: Maryland, Virginia.
T. cuspidata: Maryland, Virginia.
T. ×*media:* Maryland.

Phytophthora drechsleri Tucker (x) **root rot**

Causes root and root-crown rot, especially of guayale in irrigated fields.

Parthenium argentatum: Arizona, California, New Mexico, Texas.

Phytophthora lateralis Tucker & J. A. Milbrath (xxx) **Chamaecyparis root rot**

Causes root rot of *Chamaecyparis* spp. on the Pacific coast in Oregon and Washington, and in British Columbia. It occurs especially in landscape plantings and resembles transplanting injury in gradual decline of affected trees and faded color of foliage. The fungus progresses from diseased roots to the soil line in the root crown, where there is a distinct margin of the lesion in the inner bark. The disease is not known otherwise than as given here.

Chamaecyparis obtusa: Oregon, Washington.

Phytophthora palmivora Butl. (xxx) **palm bud rot**

Causes a very destructive palm disease called bud rot. The bud of the main stem usually is attacked, ending in death of the tree. Distributed generally in practically all palm-growing regions of the world.

Arecastrum romanzoffianum: Florida.
Cocos nucifera: Florida.
Hibiscus rosa-sinensis: Louisiana.
H. schizopetalus: Louisiana.
Persea americana: Florida.
Roystonea spp.: Florida.

Phytophthora parasitica Dast. (xxx) **stem canker**

Causes varied symptoms on different hosts according to the part of the plant attacked. It is omnivorous and is found in warm temperate to tropical latitudes, with a high optimum growth temperature. Widely distributed in North America. Also known in southern Europe, Asia, Africa, East Indies, South America, and the West Indies.

Buxus sempervirens var. *arborescens:* Maryland.
B. sempervirens var. *suffruticosa:* Maryland.
Daphne odora.
Persea americana: Florida.
Ricinus communis.

Plasmopara viburni Pk. (xxx) **Viburnum downy mildew**

Forms a thin grayish weft of mycelium on the lower surface of *Viburnum* leaves. Distributed in temperate North America.

Viburnum lantana: New Jersey.
V. opulus: Maryland, Wisconsin.
V. tinus: Georgia.

Podosphaera leucotricha (Ell. & Ev.) Salm. (xxx) **powdery mildew**

Forms a white mycelial web on leaves of *Photinia* and related trees. Possibly endemic in North America, but reported in Europe and Japan.

Photinia glabra: California.

Podosphaera oxyacanthae DC. ex d By. (xxx) **powdery mildew**

Causes white powdery mildew on leaves of Rosaceae in the northern hemisphere.

Sorbus aucuparia: Washington.
Spiraea spp.: (widespread).

Polyporus dryophilus Berk. (xx) **white pocket rot**

Causes a white pocket rot of hardwood trees, especially oaks and *Populus.* The conk is sessile, imbricate, firm, whitish turning brown, early tomentose becomes glabrous, with a granular core, 3 to 10 cm. thick, and with brown, angular pores. Distributed in North America and Europe.

Schinus molle: California.

Polyporus farlowii Lloyd (xx) **heart rot**

Causes heart rot of hardwood trees. The fungus gains entry to tree trunks through deep wounds exposing heartwood. North American only.

Morus alba: Arizona, California, New Mexico.
Schinus molle: Arizona, California.

Polyporus gilvus (Schw.) Fr. (xx) **hardwoods white sap rot**

Causes decay of sapwood in hardwood trees. Forms sessile, corky, brown conks, solitary to imbricate, rough, nearly or quite glabrous. Causes white rot of sap and heartwood. Much more common as a saprophyte, but occasionally becomes an active wound parasite on various broad-leaved trees. Distributed widely in North and South America, Europe, Asia, Australia, New Zealand, and Africa.

Eucalyptus globulus: California.
Syringa vulgaris: Maryland.
Ulmus pumila: Oklahoma.

Polyporus hirsutus Wulf. ex Fr. (xx) **hardwoods white spongy sap rot**

Causes white spongy rot of sapwood in living hardwood trees, entry of infection being made in large wounds exposing dead sapwood for a number of years. Forms small, imbricate or solitary gray to brown, hirsute, sessile conks. The fungus is widely distributed in hardwood forests in North and South America, Europe, Asia, Africa, and Australia.

Eucalyptus globulus: California.
Euonymus spp.: Massachusetts.
Ginkgo biloba.
Ilex aquifolium: Oregon.
Populus alba: Tennessee.

Polyporus hispidus Bull. ex Fr. (xx) **yellow spongy heart rot**

Causes heart rot of many hardwoods of the North Temperate Zone. Entry to the trunk is through large open wounds. Forms an annual, large, brown, shelflike conk usually well above ground on the trunk. It is hairy on top and causes yellowish spongy wood rot. The pathogen apparently exerts parasitic action on living sapwood and cambium as large bark lesions are formed at old infections where its conks are formed. Distributed widely in North America and Europe. Reported also in Siberia, India, and Pakistan.

Morus alba: Connecticut.

Polyporus schweinitzii Fr. (xxx) **red-brown butt rot**

Causes red-brown cubical root and butt rot of nearly all conifers and rarely of hardwoods. Forms a large rusty brown annual conk, woolly on top, spongy, brittle, with irregular greenish pores beneath, and grows from buried roots or around the bases of affected trees. Distributed generally in coniferous forests of North America (including Mexico and West Indies); also in Europe, Asia, and Australia.

Eucalyptus globulus: California.
Picea abies: New York.

Pinus densiflora: (widespread).
P. sylvestris: New York.
P. thunbergii: (general).

Polyporus spraguei Berk. & Curt. (xx) **hardwoods butt rot**

Causes reddish-brown heart rot of oaks, chestnuts, *Diospyros*, and other hardwoods. Conk white, sessile, rigid, up to 4x15x3 cm., nearly glabrous, roughened. Distributed in North America in Oregon, Washington, and from Missouri, Nebraska, and Arkansas, southward and eastward to Louisiana and Georgia. Supposed not to be in the Old World but believed by Weir to be identical with *Polyporus castaneae* Bourd. & Galz.

Paulownia tomentosa: Alabama, Indiana, Oregon.

Polyporus sulphureus Bull. ex Fr. (xx) **sulphur fungus, brown rot**

Causes brown cubical heart rot of many hardwood trees and rarely of conifiers. The conks are annual, substipitate, imbricate masses of two to many shelves fused behind into a single stem. The texture is fleshy to rigid when dry. The color varies from sulfur yellow to orange or almost red above and sulfur yellow below, with angular pores averaging 3 to 4 per mm. Distributed over North America (including Mexico and the West Indies), Argentina, Europe, Asia, and in South Africa and Australia.

Eucalyptus globulus: California.
Schinus molle: California.
Tamarix spp.: Maryland.

Polyporus versicolor L. ex Fr. (xx) **sap rot**

Causes sap rot in wounds on many hardwood and some coniferous species. The decay extends slowly but relentlessly until the tree dies or is broken by wind. The annual bracket conk is small, thin, distinctly zoned with alternate light and dark bands. Sap rot is much more common as a saprophyte but occasionally is a true wound parasite. Distribution is practically worldwide.

Ailanthus altissima.
Alnus glutinosa: Virginia.
Eucalyptus globulus: California.
Ginkgo biloba: District of Columbia.
Hydrangea paniculata: Connecticut, Iowa, Maryland.
Ligustrum spp.
Paulownia tomentosa: Maryland.
Picea abies: New York.
Psidium guajava: California.
Quercus robur: New York.
Schinus molle: California.
Syringa vulgaris: North Carolina, New York.
Viburnum lantana: Maryland.

Poria cocos Wolf (xx) **root tumor**

Causes swollen and more-or-less rounded lumps on roots of various trees. Commonly known as "tuckahoe." Distributed widely in

North America from Ontario and British Columbia southward. Apparently little damage is done in forest trees. Similar root parasites are known in other parts of the world, but little is known of their damaging effect on forests.

Eucalyptus globulus: Florida.

Prospodium plagiopus (Mont.) Arth. (xxx) **rust**

Autoecious. Causes brown rust of the leaves of Bignoniaceae. Known in Florida and in Cuba and Puerto Rico.

Tabebuia lepidota: Florida.

Pseudonectria rousseliana (Mont.) Seaver (xx) **box canker**

Associated with twig canker and resulting tip blight of box. Distributed in North America east of the Mississippi River; also known in Europe. Probably has been carried on box from its original locality.

Buxus sempervirens var. *arborescens:* New York.

B. sempervirens var. *suffruticosa:* New York.

Pseudopeziza populi-albae Kleb. (x) **poplar twig canker**

Causes canker of branches and twigs of poplar; results in defoliation. Distributed in eastern North America and in Germany.

Populus alba.

Puccinia coronata Cda. (xxx) **crown rust**

Heteroecious. Attacks woody hosts in the families Rhamnaceae and Elaeagnaceae, with numerous grasses and oats as alternate hosts. Distributed in temperate North America, West Indies, South America, and temperate regions of the Old World.

Arundo donax: California.

Rhamnus cathartica: Maine to Pennsylvania, Missouri, and Montana.

R. frangula: New Brunswick.

Puccinia heterospora Berk. & Curt. (xxx) **Malvaceae rust**

Autoecious. Causes rust of leaves of many Malvaceae. Common in North America including Mexico, Central and South America, and in warmer parts of the Old World.

Hibiscus cardiphyllus: Texas.

Puccinia ignava Arth. (xxx) **bamboo rust**

Causes brown, powdery rust pustules on *Bambusa* leaves. Known in the United States, Cuba, Puerto Rico, and Trinidad.

Bambusa spp.: Georgia.

Puccinia invaginata Arth. & Johnston (xxx) **Gouania rust**

Autoecious. Causes leaf rust of *Gouania* spp. in Florida. Also reported in the West Indies, Guatemala, Trinidad, and South America.

Gouania sp.: Florida.

Puccinia melanocephala Syd. (xxx) **bamboo rust**

Causes brown rust pustules on the lower surface of leaves of *Arundinaria*, *Bambusa*, and *Phyllostachys* in China, India, and Japan. This rust has been introduced into the United States.

Bambusa vulgaris: Florida, Georgia, Mississippi, Texas.
Phyllostachys aurea: Florida, Georgia, Mississippi, Texas.
P. bambusoides: Florida, Georgia, Mississippi, Texas.

Pucciniastrum ericae (Naumann) Cumm. (xxx) **Erica rust**

Causes rust of *Erica* leaves. Found in California in 1934 where it evidently was recently introduced. Known in Germany, Switzerland, and Spain.

Erica spp.: California.

Pucciniastrum myrtilli (Schum.) Arth. (xxx) **hemlock-Ericaceae rust**

Heteroecious. Forms white tubular outgrowths on lower surface of hemlock leaves and has rhododendrons and blueberries as alternate hosts. Distributed from Alaska to New Mexico and from Nova Scotia to Florida; also in Central America, Europe, and in Asia in Japan, Siberia, and Kamchatka.

Rhododendron flavum: New Jersey.

Pycnostysanus azaleae (Pk.) Mason (x) **Rhododendron blight**

Causes bud and twig blight of *Rhododendron* spp. Destructive, threatening to exterminate some species. Distributed widely in the United States. Also known in Great Britain.

Rhododendron spp.: California, Massachusetts, New Jersey, Tennessee.

Pythium aphanidermatum (Edson) Fitz. (xxx) **root rot**

Causes root rot and damping-off of young plants of numerous kinds. It is known in the United States in California and Florida; also distributed in China, Pakistan, India, and Africa.

Carica papaya: California, Florida.

Pythium artotrogus (Mont.) d By. (xxx) **damping-off**

Causes damping-off of young seedling conifers. Distributed widely in North America and Europe. Reported in Hawaii and India.

Pinus nigra.

Pythium debaryanum Hesse (xxx) **damping-off**

Causes death of small roots, especially of seedlings, resulting in damping-off of many broad-leaved and coniferous species. Distributed widely in North America, Europe, and Asia. Reported in Africa, Australia, Tasmania, East Indies, and Hawaii.

Berberis spp.: California.
Carica papaya: Texas.
Euphorbia pulcherrima: Oklahoma.
Pinus nigra.

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Pythium intermedium d By. (xxx) **broadleaf root rot**

Causes death of roots of broad-leaved species in California and The Netherlands.

Ricinus communis: California.

Pythium irregulare Buis. (xxx) **damping-off**

Causes root rot of various trees. Widely distributed in California and in Europe, South Africa, and Hawaii.

Picea abies.
Rhododendron spp. (foreign) : California.

Pythium perniciosum Serb. (xxx) **root rot**

Causes root rot and basal stem girdle of poinsettia.

Euphorbia pulcherrima: California.

Pythium ultimum Trow. (xxx) **damping-off**

Causes damping-off of seedlings and basal rot of cuttings of various tree species. Acid nursery soil controls damping-off of conifers, but has little effect on susceptibility of hardwoods. Widely distributed in North America and Europe, Africa, Australia, New Zealand, Philippines, and Argentina.

Aucuba japonica.
Buxus sempervirens.
Camellia japonica.
Daphne odora.
Euonymus japonicus.
Euphorbia pulcherrima: California, New Jersey.
Fuchsia spp.: California.
Gardenia jasminoides.
Hedera helix.
Hydrangea paniculata.
Ligustrum ovalifolium.
Parthenium argentatum: California.
Persea americana: California.
Pinus sylvestris.
Rhododendron indicum.
Ulmus pumila.

Ramularia diervillae Pk. (xxx) **leaf spot**

Occurs on small, round, white leaf spots, 2 to 3 mm. across, with narrow, dark, slightly raised borders. Distributed in eastern North America westward to Texas and Wisconsin.

Weigela spp.: Tennessee.

Ramularia euonymi Ell. & Kell. (xxx) **Euonymus leaf spot**

Occurs on grayish spots, 2 to 3 mm. across, with slightly raised dark borders on *Euonymus* leaves. Reported in Kansas, Missouri, and Arkansas.

Euonymus japonicus: Arkansas.

Ramularia hedericola Heald & Wolf (xxx) **Hedera leaf spot**

Occurs on large, irregular leaf spots, grayish-brown above and brown beneath, on living leaves of *Hedera.* Known only in Texas.

Hedera helix: Texas.

Ravenelia humphreyana P. Henn. (xxx) **Caesalpinia rust**

Forms small, brown, powdery pustules on leaves and stems, causing defoliation of *Caesalpinia* spp. Reported from Florida, Mexico, Cuba, Jamaica, Puerto Rico, Costa Rica, and Guatemala.

Caesalpinia gilliesii: Florida.

Ravenelia laevis Diet. & Holw. (xxx) **indigo rust**

Forms brown, powdery pustules on *Indigofera* spp. Reported in Texas; also in Mexico and China.

Indigofera spp.: Texas.

Rehmiellopsis balsamea Waterman (xxx) **Abies tip blight**

Causes wilt and blight of newly formed *Abies* needles on lateral shoots, greatly resembling frost damage. Dead leaves hang pendant from the twigs and remain thus for one season. The twig may be killed back also. Known to attack *Abies balsamea, A. concolor, A. cephalonica, A. nobilis* [*procera*], *and A. fraseri.* It is apparently native on *A. balsamea* in northern Maine. Known to occur in Maine, New Hampshire, Massachusetts, Rhode Island, and New York.

Abies cephalonica: Rhode Island.

Rhizoctonia microsclerotia Matz (xxx) **web blight**

Causes web formation on green stems of fig and other broad-leaved trees resulting in blight of heavily attacked parts. Apparently first known in Puerto Rico.

Ficus carica: Florida to Louisiana, Texas.

Firmiana platanifolia: Florida.

Rhizoctonia ramicola D. A. Roberts (xxx) **silky thread blight**

This pathogen has an aerial habitat. The disease recurs in previously infected broad-leaved plants, probably overwintering as superficial mycelium or in diseased leaves, matted together or dangling from twigs by threads of mycelium. Known only in Florida. A potential threat to tropical regions.

Elaeagnus pungens: Florida.

Feijoa sellowiana: Florida.

Lagerstroemia indica: Florida.

Pittosporum tobira: Florida.

Rhizoctonia solani Kuehn (xxx) **root rot**

Causes damping-off of young coniferous and hardwood seedlings and transplants. Acid nursery soil controls damping-off of conifers but has little effect on susceptibility of hardwoods. Distributed practically everywhere that cultivated crops are grown in North America, Central and South America, Europe, Asia, Africa, and Australia.

Acalypha wilkesiana: Illinois.

Berberis vulgaris: Connecticut.

Buxus sempervirens var. *arborescens.*

B. sempervirens var. *suffruticosa.*

Daphne spp.: New York.

Euphorbia pulcherrima: Florida, Illinois, New Jersey, Texas.

Hedera helix: Connecticut.
Hydrangea macrophylla: Maryland (in greenhouse).
Ilex aquifolium: Maryland.
Lavatera arborea: Illinois.
Manihot esculenta: Florida.
Picea abies: (general).
Pinus mugo: New Hampshire.
P. nigra: (general).
P. nigra var. *poiretiana:* (general).
P. sylvestris: (general).
Rhododendron spp..
Ricinus communis: Florida, Kansas, Texas.
Salvia officinalis: Connecticut.
Sciadopitys verticillata: Connecticut.
Sophora japonica: Connecticut.
Taxus spp.: Connecticut.
Thuja orientalis.
Ulmus pumila: Great Plains States.

Rhytisma acerinum Pers. ex Fr. (xxx) **maple tar spot**

Causes thickened, black spots up to 2 to 3 cm. across on the upper side of maple leaves, resembling a layer of tar. Heavy attacks cause defoliation. *Rhytisma acerinum* occurs in North America and Europe wherever maples grow in extensive stands. It is reported from India and Japan.

Acer platanoides: Ohio.

Rosellinia aquila (Fr.) de N. (x) **canker**

Causes canker and dying of branches, and root rot. Usually is found as a saprophyte on dead wood. Scarce in United States east of the Pacific coast. Occurs over temperate Europe, reported from Japan and Guatemala.

Morus alba: Indiana.

Rosellinia necatrix (Hartig) Berl. (x) **root rot**

Causes root rot of broad-leaved trees in scattered localities in the United States, Europe, and Asia.

Ligustrum spp.: California.
Osmanthus ilicifolius: California.
Persea americana: California.

Schizophyllum commune Fr. (xx) **sapwood rot**

Causes superficial decay of sapwood of broad-leaved trees, especially under sunscalded thin bark. It is a wound parasite and can do considerable injury. The conks are sessile, gray above, 1 to 4 cm. wide, fan shaped, with brownish forked gills beneath, which are split on their lower edges. This fungus is cosmopolitan.

Ailanthus altissima.
Albizia julibrissin: District of Columbia.
Caesalpinia gilliesii: California.
Castanea sativa: Oregon.
Cedrela sinensis: New York.

Ficus carica: California.
Juglans regia: California.
Melia azedarach: Oklahoma.
Morus alba: California.
Ricinus communis: Florida.
Schinus molle: California.
Ulmus pumila: California.

Scirrhia acicola (Dearn.) Siggers (xxx) **brown spot needle blight**

Causes yellow to brown, small (3 mm.) spots on the needles of seedling southern pines with distinct margins or "bar spots," 3 mm. long, and a round brown central spot, pinhead sized. The outer ends of the needles, girdled by spots, gradually die. Multiple infections of single needles soon kill the entire needle. Repeated annual infections kill the newly formed needles each year, leaving the seedlings with greatly reduced leafage and resulting in death or retarded growth. Judicious burning of dead grass and infected needles in winter, combined with spraying 4–4–50 bordeaux mixture, will check the disease until the trees reach 30 cm. in height, when they can resist the fungus.

The brown spot fungus has been found in North America on 24 species and varieties of pines in the Southern States from North Carolina to Texas and inland to Arkansas, Tennessee, and Ohio. It was found once in Oregon. It has been found on a number of foreign pines. The disease is not known in any foreign country, and it is a very serious potential threat for those countries of warmer climates with important forests of hard pines.

Pinus halepensis: Florida.
P. nigra: Ohio, Kansas, Kentucky, Missouri, Virginia.
P. nigra var. *poiretiana:* Louisiana.
P. pinaster: Florida, Louisiana, Mississippi, Texas.
P. pinea: Florida.
P. sylvestris: Ohio.
P. thunbergii: Florida, Mississippi.

Sclerotinia camelliae Hara (xxx) **Camellia flower spot**

Causes dark-colored petal spots and decay in severe attacks. Now known in California, Oregon, Louisiana, Georgia, and North Carolina. Its only known foreign occurrence is in Japan. Apparently it came from Japan years ago on *Camellia japonica.*

Camellia japonica: California, Oregon, North Carolina, Georgia, Louisiana.
C. reticulata: California.
C. sasanqua: California.

Sclerotinia sclerotiorum (Lib.) d By. (xxx) **broadleaf canker**

Causes canker and decay of stems, and decay of flowers and leaves, of numerous broad-leaved species. Numerous sclerotia are formed within cavities in the tissues of the host plant. Widely distributed in North America, Europe, and eastern Asia.

Camellia spp.
Euphorbia pulcherrima: Washington.

Ficus carica: California, Texas.
Forsythia spp.: North Carolina.
Morus alba: Texas.
Parthenium argentatum: California.
Persea americana: California.
Ricinus communis: Florida.
Syringa vulgaris: Washington.

Sclerotium bataticola Taub. (xxx) **damping-off**

Causes damping-off and root-crown rot of coniferous and hardwood seedlings in nurseries. Widely distributed in North America.
Acer platanoides.
Parthenium argentatum.
Picea abies: California, Florida, North Carolina, Middle West, and Prairie States.

Scopella sapotae Mains (xxx) **rust**

Causes red to purplish-red rusty spots on leaves of sapodilla seedlings at Homestead, Fla. It is present in the West Indies in Cuba, Bahamas, and the Dominican Republic, and may be native there. Not found on the United States mainland until 1942.
Achras zapota: Florida.

Selenophoma donacis (Pass.) Sprague & A. G. Johns. (x) **leaf spot**

Causes dry leaf spots on *Arundo donax* in France, Italy, Portugal, and Yugoslavia.
Arundo donax: California.
Bambusa spp.: California.

Septoria aceris (Lib.) Berk. & Br. (xxx) **maple leaf spot**

Causes rounded, brown spots on maple leaves and cotyledons of seedlings. Distributed in North America and Europe.
Acer platanoides: Illinois.

Septoria alni Sacc. (xxx) **Alnus leaf spot**

Occurs on ochraceous spots on upper leaf surface of *Alnus glutinosa.* Reported from Europe and Japan.
Alnus glutinosa: Wisconsin.

Septoria argyraea Sacc. (xxx) **Elaeagnus leaf spot**

Occurs on ochraceous spots on *Elaeagnus* leaves in the United States and in Italy.
Elaeagnus angustifolia: Iowa, North Dakota, Wisconsin.

Septoria azaleae Vog. (xxx) **Rhododendron leaf spot**

Causes *Rhododendron* leaf spots, reddish yellow turning to rusty brown; called leaf scorch in Europe. Sparsely distributed in the United States and Europe, reported in Japan.
Rhododendron spp.: California, New Jersey, Ohio.

Septoria betulicola Pk. (xxx) **birch leaf spot**

Occurs on small, angular, dark brown spots with indefinite yellow borders on birch leaves in North America.
Betula pendula: Wisconsin.

Septoria betulina Pass. (xxx) **birch leaf spot**

Occurs on irregular, gray spots of birch leaves in the United States, Denmark, Italy, Russia, and Siberia.

Betula pendula: Iowa.

Septoria didyma Fckl. (xxx) **willow leaf spot**

Causes leaf spot of willow, brown with grayish-brown center, small, and irregular. Known in the United States, Austria, France, and Germany.

Salix fragilis: Wisconsin.

Septoria elaeagni (Chev.) Desm. (xxx) **Elaeagnus leaf spot**

Occurs on small, rounded leaf spot of *Elaeagnus*, white, dry, with brown border. Known in Kansas, Norway, and France.

Elaeagnus angustifolia: Kansas.

Septoria evonymella Pass. (xxx) **Euonymus leaf spot**

Causes leaf spot of *Euonymus*. Known in the United States, Italy, and Austria.

Euonymus japonicus: New Jersey, South Carolina.

Septoria evonymi Rabh. (xxx) **Euonymus leaf spot**

Causes large, pale brown leaf spots on *Euonymus europaea* in Italy, Germany, and Russia. Reported also in the United States in Mississippi, Indiana, South Carolina, and Virginia.

Euonymus japonicus: Mississippi.

Septoria exotica Speg. (xxx) **Hebe leaf spot**

Occurs on small leaf spots of *Hebe*, 1 to 3 mm. wide, white above with wide purple outer edge. Known in Great Britain and Argentina.

Hebe sp.: California.

Septoria hippocastani Berk. & Br. (xxx) **Aesculus leaf spot**

Causes numerous small spots on *Aesculus* leaves; brown, later whitish, bordered by a narrow fuscous line. Sparsely distributed in North America and Europe.

Aesculus hippocastanum: Pennsylvania, Vermont.

Septoria hydrangeae Bizz. (xxx) **Hydrangea leaf spot**

Causes irregular, dull brown spots with red margins on leaves of *Hydrangea* in Ohio, Great Britain, Italy, and Germany. Said to cause serious damage.

Hydrangea paniculata: Ohio.

Septoria mortolensis Penz. & Sacc. (xxx) **hardwoods leaf blight**

Occurs on leaves of *Acacia*, *Eucalyptus*, and *Hedera* in the United States and Italy; also known in India.

Eucalyptus spp.: California.

Septoria musiva Pk. (xxx) **leaf spot, canker**

Causes numerous small, angular, brown leaf spots, often with a pale outer halo. This form of the disease is common and widely distributed on a number of native and exotic poplars in the United States and Canada. It also causes bark cankers by infection in lenticels. It rapidly kills the bark and forms small cankers. Cultures made early in canker formation yield only *Septoria musiva*, but other canker fungi soon appear, contribute to the enlargement of the cankers, and even crowd out the original canker-former. Cankers are uncommon on American poplars but are destructive on hybrids and some species of European lineage.

The fungus is native in, and believed limited to, North America, except for an occurrence in Argentina, probably due to importation of planting stock years ago. This canker is a dangerous threat to poplar cultures of other continents and can be shipped as spores fallen between bud scales on cuttings.

Populus alba: United States.
P. ×*berolinensis:* United States, Canada.
P. maximowiczii: United States, Canada.
P. nigra: United States, Canada.
P. ×*petrowskyana:* Canada.
P. ×*razoumowskyana:* Canada.

Septoria oleandrina Sacc. (xxx) **oleander leaf spot**

Occurs on white spots on the upper surface of oleander leaves. Distributed in the United States, Austria, Denmark, France, and Italy.

Nerium oleander: Florida, Louisiana.

Septoria rhoina Berk. & Curt. ex Sacc. (xxx) **Cotinus leaf spot**

Causes small, white leaf spots of *Cotinus* and *Rhus* spp. with wide black margins. Widely distributed in North America and apparently unknown in Europe except in Italy.

Cotinus coggygria: Connecticut, Massachusetts, New York, Virginia.

Septoria sorbi Lasch (xxx) **Sorbus leaf spot**

Occurs on small, irregular, brown leaf spots of *Sorbus* in the United States; also reported in Europe.

Sorbus aucuparia: Iowa, Montana.

Septoria unedonis Rob. & Desm. (xxx) **Arbutus leaf spot**

Occurs on numerous, small, irregular leaf spots of *Arbutus;* whitish in the center, with very wide purplish border. Distributed in Oregon and in Europe; also reported in Algeria.

Arbutus unedo: Oregon.

Sphaceloma perseae Jenkins (xxx) **avocado scab**

Causes scablike lesions on avocado leaves, shoots, and fruits, inflicting considerable damage. Distributed in the United States in

Florida and Texas, and in Mexico, Central and South America, West Indies, and in Rhodesia and the Union of South Africa.
Persea americana: Florida, Texas.

Sphaceloma poinsettiae Jenkins & Ruehle (xxx) **spot anthracnose**

Causes spot anthracnose of poinsettia leaves in Florida and Hawaii.
Euphorbia pulcherrima: Florida.

Sphaceloma viburni Jenkins & Bitanc. (xxx) **spot anthracnose**

Causes spot anthracnose of leaves and small cankers on young stems of viburnum. Known in California, Florida, Maryland, and Washington.
Viburnum opulus: Washington.

Sphaerella gardeniae Cke. (xxx) **leaf disease**

Causes disease of *Gardenia* leaves in southern United States.
Gardenia jasminoides: South Carolina.

Sphaeropsis ulmicola Ell. & Ev. (xx) **elm canker**

Causes canker of elms in eastern United States.
Ulmus procera: Pennsylvania.
U. pumila: Connecticut.

Sphaerotheca humuli DC. ex Burr. (xxx) **hardwoods powdery mildew**

Causes white powdery mildew of leaves and young shoots of many broadleaf species. This pathogen is generally distributed in the United States, Europe, and Asia.
Kalanchoë laciniata: Maryland, New Jersey.
Spiraea spp.: Texas.
Tamarix spp.: Indiana.

Sphaerotheca lanestris Harkn. (xxx) **oak powdery mildew**

Causes brown felty mildew on the lower surface of oak leaves. Distributed in the United States in Alabama, California, Iowa, Indiana, Illinois, Mississippi, and Missouri. Reported also in Asia in India, Formosa, Japan, and China.
Quercus robur: California.
Q. suber: California.

Sphaerotheca pannosa (Wallr.) Lév. (xxx) **powdery mildew**

Forms an abundant web of mycelium on leaves and stems, with profuse, powdery fungus conidia. It occurs on a number of broad-leaved species. Distributed throughout North America. Reported in Venezuela, Denmark, Norway, South Africa, China, and India.
Lycium halimifolium: Idaho, Washington.
Photinia serrulata: Oregon.

Sphaerulina taxi (Cke.) Mass. (xxx) **yew needle blight**

Causes dying of yew needles and defoliation in severe attacks. Destructive locally. Known in Oregon and Great Britain.
Taxus spp. (foreign) : Oregon.

Sporonema camelliae Earle (xxx) **Camellia leaf spot**

Causes leaf spot of *Camellia* in southern United States.
Camellia japonica: Alabama, Virginia.

Stereum gausapatum Fr. (xx) **oak wound rot**

Causes a white pocket rot of living oaks and other hardwoods. The conk is small, thin, resupinate to slightly shelving, tobacco brown above, smooth and snuff brown below. Distributed generally in North America where oaks grow. Also in Europe, Australia, and reported in Siberia.
Castanea mollissima: Maryland.

Stereum hirsutum Willd. ex Fr. (xx) **hardwoods wound rot**

Causes a white stringy rot of hardwoods. The rot enters through large open wounds. The conk is mostly resupinate with small shelves about 2 x 10 mm., gray, finely hairy on top, below smooth, ochraceous to tan. Practically cosmopolitan, occurring on every continent.
Castanea crenata: Oregon.
C. mollissima: Oregon.
C. sativa: Oregon.
Eucalyptus globulus: California.
Ligustrum spp.

Stereum sanguinolentum Alb. & Schw. ex Fr. (xx) **conifer trunk rot**

Causes so-called "red heart" in living coniferous trees. Conk mostly flat with outturned edges, up to 8 cm. wide; upper surface silky hairy, pinkish buff to pale olive buff. Lower surface glabrous with deep cracks when dry, bleeding if wounded when fresh. Distributed generally in North America and Europe. Also reported from Siberia, Australia, Africa, and New Zealand.
Larix decidua: Idaho.
Picea abies: Idaho.

Stigmina platani (Fckl.) Sacc. (xxx) **Platanus leaf spot**

Causes brown spots with loosened epidermis, beneath which fungus pustules form. Inoculations with and without wounds succeeded on leaves of *Platanus racemosa* Nutt. *P. orientalis* L. has had the disease but it has not been known on *P. racemosa* until recently. Distributed in California and Europe.
Platanus orientalis: California.

Taphrina coryli Nishida (xxx) **leaf blister**

Causes light-colored blisters of hazel leaves in eastern United States and in Japan.
Corylus avellana: Pennsylvania.

Taphrina johansonii Sadeb. (xxx) **catkin hypertrophy**

Causes swollen growth of pistillate flowers in poplar catkins. Distributed in eastern United States, Europe, and Japan.
Populus alba: New York.

Taphrina populina Fr. (xxx) **yellow leaf blister**

Causes golden blisterlike spots on poplar leaves. Distributed locally throughout eastern North America, occasionally in western North America; widely distributed in Europe. Known also in India, China, and Japan.

Populus nigra: Iowa, Washington, West Virginia.
P. nigra var. *italica:* Iowa, Oregon, Vermont.

Taphrina ulmi (Fckl.) Johans. (xxx) **leaf blister**

Causes small, slightly puffed spots on elm leaves in United States west to Kansas, Missouri, and Texas; also reported in Europe and Chile.

Ulmus procera: Massachusetts, Wisconsin.

Thyronectria austro-americana (Speg.) Seeler (xx) **hardwoods canker**

Causes small cankers on smaller branches that result in girdling and tip blight of *Gleditsia* and *Albizia* in the United States, and on the former in Argentina. The proven susceptibility of *G. japonica* indicates possible trouble if this fungus reaches China or Japan.

Albizia julibrissin: Georgia, North Carolina.
Gleditsia japonica: Massachusetts.

Trabutia ficuum (Niessl) Th. & Syd. (xxx) **Ficus tar spot**

Forms shiny, black, irregular areas on leaves of *Ficus* spp. in southern United States, India, Japan, and the Philippines; also reported in Portuguese East Africa and the Union of South Africa.

Ficus elastica: Florida.

Trametes suaveolens L. ex Fr. (xx) **white heart rot**

Causes white heart rot of willow and occasionally of other hardwoods. Conk sessile, corky, white to gray, fragrant when fresh, 5 to 15 cm. wide, bracketlike, pores white to yellowish. Distributed generally in North America and Europe; also in Siberia and South Africa.

Salix alba: Connecticut, Maine.

Trichoscyphella willkommii (Hartig) Nannf. (xx) **larch canker**

Causes perennial stem canker of young larches and cankers of small branches on older trees. Small cuplike fruiting bodies 3 to 6 mm. across, orange within and white without, are formed on the face of small cankers and near the marginal callus roll around older large cankers. It is generally present in larch stands over Europe. Was found in two localities in eastern North America on planted larches from Europe. All diseased trees were removed and it is hoped the disease has been eliminated.

Larix occidentalis has been said to be so heavily attacked in Denmark that it should not be grown in that country. This means that this fungus should not be allowed to reach the native range of this tree in the Pacific Northwest. Potentially dangerous to larch forests in eastern Asia.

Larix decidua: Massachusetts.
L. leptolepis: Massachusetts.
Pseudolarix amabilis: Massachusetts.

Tubercularia ulmea Carter (xxx) **elm canker**

Causes canker of elm branches in Illinois. Not otherwise known.
Ulmus pumila: Illinois.

Uncinula australiana McAlp. (xxx) **crapemyrtle powdery mildew**

Causes white, powdery mildew on leaves and inflorescences of *Lagerstroemia*, often with tiny black dots scattered over the whitened area. Reported in the United States in Louisiana, Alabama, and the District of Columbia. Apparently came on propagating stock from Asia. Distributed in China, Japan, and Australia.
Lagerstroemia indica: Louisiana.

Uncinula flexuosa Pk. (xxx) **powdery mildew**

Causes white to gray powdery mildew on *Aesculus* leaves. Widespread in North America.
Aesculus hippocastanum: Maryland.

Uncinula salicis DC. ex Wint. (xxx) **powdery mildew**

Causes white, powdery mildew of willow and poplar leaves. Generally distributed in North America and Europe and is reported in Japan, China, and India.
Salix alba: Connecticut, New York.
S. fragilis: Iowa, Massachusetts, New York.

Uromyces cestri (Mont.) Lév. (xxx) **Cestrum rust**

Autoecious. Forms yellow rust pustules followed by powdery black pustules on leaves of numerous species of *Cestrum*. Known in the United States, Central and South America, and the West Indies.
Cestrum spp.: Florida.

Uromyces coluteae Arth. (xxx) **bladder-senna rust**

Causes cinnamon-brown, powdery rust pustules on the lower side of leaves of bladder-senna. Arthur says "adventive from Europe." It is common in Europe.
Colutea arborescens: Kansas.

Uromyces genistae-tinctoriae (Pers.) Wint. (xxx) **Genista rust**

Forms cinnamon-brown, powdery pustules on lower leaf surface of numerous species of *Caragana*, *Cytisus*, *Genista*, and *Laburnum* in Europe, Siberia, China, and Manchuria. Reported in California on *Genista* spp. Probably adventive from the Old World.
Genista spp.: California.

Uromyces indigoferae Diet. & Holw. (xxx) **indigo rust**

Autoecious. Forms small spore pustules, cinnamon-brown, powdery, followed by small, blackish-brown pustules on leaves of *Indigofera* spp. Ranges from Florida and Texas southward to Mexico, Central America, and Venezuela.
Indigofera spp.: Florida, Texas.
I. miniata: Florida.

Ustilago shiraiana P. Henn. (xxx) **bamboo rust**

Infects bamboo branches, causing witches'-broom effect and swelling of shoots, which stop growth. Dark brown, powdery spore masses burst through the leaf sheaths. On *Arundinaria*, *Bambusa*, *Phyllostachys*, and *Sasa* species in Japan, India, China, and Formosa. Was introduced into California and Florida, but was eradicated.

Bambusa spp.

Phyllostachys bambusoides: California, Florida, Louisiana, Maryland, Mississippi, Texas.

P. nigra: California, Florida, Louisiana, Maryland, Mississippi, Texas.

P. nigra var. *henonis:* California.

Valsa abietis Fr. (xx) **conifer canker**

Causes canker of branches and small stems of numerous conifers, resulting in dieback and even death of entire trees in severe attacks. It is generally distributed in coniferous forests of northern North America and Europe.

Thuja orientalis: Pennsylvania.

Valsa ambiens Pers. ex Fr. (x) **hardwoods canker**

Causes canker of branches and stems of many broad-leaved trees. Numerous small pustules, with exuding fungus spores in damp weather, protrude above the surface of the dead bark. Distributed generally in North America and Europe; also reported in South America.

Acer palmatum: Connecticut, Massachusetts, New Jersey, New York.

A. platanoides: Connecticut, Massachusetts, New Jersey, New York.

A. pseudoplatanus: Connecticut, Massachusetts, New Jersey, New York.

Elaeagnus angustifolia: North Dakota.

Valsa cenisia Nits. (xx) **canker**

Causes bark canker of *Cupressus* and *Juniperus* in the United States and Europe.

Cupressus sempervirens: California.

Valsa kunzei Fr. (xx) **conifer canker**

On cankers of branches and stems mostly of firs, spruces, and pines in North America, Europe, and Siberia.

Larix decidua: Massachusetts, New York.

Picea abies: Connecticut, Illinois, Massachusetts, New York, Pennsylvania, Rhode Island.

P. orientalis: Connecticut, New York, Pennsylvania.

Pinus griffithii: Maryland.

Valsa leucostoma Pers. ex Fr. (xx) **hardwoods dieback**

Generally distributed on hardwoods in North America, Europe, Siberia, and Australia.

Sorbus aucuparia: Ohio, West Virginia.

Valsa nivea Hoffm. ex Fr. (xx) **dieback**

Causes bark lesions girdling branches mostly of poplars and willows, but occasionally of other broad-leaved trees. Small, dark-colored, pimplelike pustules break through the epidermis, allowing tiny spores to escape and be blown about. Widespread in North America and Europe.

Populus alba: (widespread).

Valsa sordida Nits. (xx) **hardwood canker**

Causes aggressive canker formation on trunks and branches of poplars and other hardwoods in North America and Europe; also reported from Japan and South Africa.

Acer palmatum: Connecticut, Massachusetts, New Jersey, New York.
A. platanoides: Connecticut, Massachusetts, New Jersey, New York.
A. pseudoplatanus: Connecticut, Massachusetts, New Jersey, New York.
Populus alba: New Mexico, Texas.
P. nigra var. *italica:* Arizona, Illinois, Maryland, New Mexico, Texas.
P. simonii.
Quercus robur: New Jersey, Rhode Island.
Salix alba: New Jersey, New York, Oklahoma, Wisconsin.
S. babylonica: Iowa, Maryland, New Jersey, New Mexico, Tennessee.
S. fragilis: Massachusetts.

Verticillium albo-atrum Reinke & Berth. (xxx) **Verticillium wilt**

The first indication of the presence of this fungus is the sudden wilting with yellowing and final browning of leaves on single branches or parts of the crown of hardwoods. Sometimes slime flux develops on the diseased trunk or branch. The diseased stems show discolored streaks or annual rings in the wood. In maples the discoloration is green and in most other species it is some shade of brown with tinges of yellow or blue. The disease is generally distributed in North America and Europe, and is reported in Africa and Australia. It is not known in undisturbed forests, but appears to accompany cultivation or human occupancy.

Acer palmatum: (occasionally, especially in the Northeastern and Central States).
A. platanoides: North Carolina, Virginia.
A. pseudoplatanus: (occasionally, especially in the Northeastern and Central States).
Aesculus hippocastanum: Pennsylvania.
Ailanthus altissima: New York, Pennsylvania, Virginia.
Aucuba japonica: New Jersey.
Berberis thunbergii: Connecticut to Virginia, Illinois, and Michigan.
B. vulgaris: Connecticut.
Ceratonia siliqua: California.
Cotinus coggygria: Connecticut, Illinois, Nebraska, New Jersey, New York.

Erica australis.
E. subdivaricata.
Euphorbia milii: New Jersey.
Fuchsia spp.: California.
Heliotropium arborescens: Maryland.
Parthenium argentatum: Arizona, California, New Mexico, Texas.
Persea americana: California.
Pistacia vera.
Pittosporum spp.: California.
Rhododendron spp.: Massachusetts.
Schinus terebinthifolia: California.
Ulmus procera: Connecticut, Massachusetts, New Jersey, New York.
Viburnum lantana: Illinois.
V. plicatum: Indiana.
V. tinus: Oregon.

Volutella buxi (DC. ex Fr.) Berk. & Br. (x) **box leaf blight**

Causes leaf blight and twig dieback of box. Generally distributed in North America and Europe wherever box is grown.
Buxus sp.: North Carolina.
B. sempervirens var. *arborescens:* (general).
B. sempervirens var. *suffruticosa:* (general).

Xylaria mali Fromme (xxx) **black root rot**

Causes black root rot of apple trees and occasionally of oaks and probably other hardwoods in association with apple trees. Maple and other species have been successfully inoculated. Apparently this is a native American fungus, since it is known nowhere else. It is distributed from Maryland to South Carolina and westward to Arkansas and Illinois. This is an aggressive pathogen that causes the most common and destructive root rot of apple. It lives for years in rotted roots.
Acer platanoides: Virginia.

Mistletoes

Phoradendron californicum (Pursh) Nutt. (xxx) **mistletoe**

Makes large, dense witches'-brooms in the crowns of various hardwood trees from California to Texas.
Parkinsonia spp.: Texas, California.

Phoradendron flavescens (Pursh) Nutt. **mistletoe**

Makes large, dense witches'-brooms with perennial leaves in the crowns of many hardwoods from Eagle Pass, Texas, eastward and northward to Missouri, Indiana, Ohio, Maryland, and New Jersey.
Broussonetia papyrifera: Texas.
Cinnamomum camphora: Florida.
Melia azedarach: Texas.
Plumeria spp.: Florida.
Pyrus pyrifolia: Florida.

HOST INDEX OF THE DISEASES

This section lists alphabetically by their scientific names the host trees, shrubs, and woody vines and includes the authors of the scientific names, as well as many common names. Scientific names of the hosts are those believed to be correct under the International Code of Botanical Nomenclature and generally accepted in usage. Synonymy is not given. The reported pathogens on each host are listed alphabetically within their groups by their scientific names but without authors or common names because these are given in the preceding section.

Abelia chinense R. Br. **Chinese abelia**
Phymatotrichum omnivorum
Abies cephalonica Loud. **Greek fir**
Agrobacterium tumefaciens
Milesia fructuosa
Rehmiellopsis balsameae
Abies firma Sieb. & Zucc. **Momi fir**
Agrobacterium tumefaciens
Abies holophylla Maxim. **Manchurian fir**
Agrobacterium tumefaciens
Abies nephrolepis Maxim. **Khingan fir**
Milesia fructuosa
Acacia cyclops Cunn. **cyclops acacia**
Erysiphe polygoni
Acacia longifolia (Andr.) Willd. **Sydney acacia**
Virus—Pierce's vine disease
Acalypha wilkesiana Muell.-Arg. **painted copperleaf**
Clitocybe tabescens
Rhizoctonia solani
Acanthopanax sieboldianus Makino—
Phymatotrichum omnivorum
Acer palmatum Thunb. **Japanese maple**
Cristulariella depraedens
Nectria cinnabarina
Phyllosticta minima
Valsa ambiens
V. sordida
Verticillium albo-atrum
Acer platanoides L. **Norway maple**
Armillaria mellea
Cristulariella depraedens
Fomes connatus
Fusarium solani
Gloeosporium apocryptum
G. saccharinum
Marssonina truncatula
Nectria cinnabarina
Phyllosticta minima
P. saccharina
Phytophthora cactorum
P. cambivora
Rhytisma acerinum
Sclerotium bataticola
Septoria aceris
Valsa ambiens
V. sordida
Verticillium albo-atrum
Xylaria mali
Acer pseudoplatanus L. **planetree maple**
Agrobacterium tumefaciens
Botryosphaeria ribis
Cristulariella pyramidalis
Nectria cinnabarina
Phyllosticta minima
Phytophthora cactorum
Valsa ambiens
V. sordida
Verticillium albo-atrum
Achras zapota L. **sapodilla**
Pestalotia scirrofaciens
Phymatotrichum omnivorum
Scopella sapotae
Aesculus hippocastanum L. **horsechestnut**
Collybia velutipes
Glomerella cingulata
Guignardia aesculi
Phymatotrichum omnivorum

Phytophthora cactorum
Septoria hippocastani
Uncinula flexuosa
Verticillium albo-atrum

Ailanthus altissima (Mill.) Swingle **ailanthus (tree-of-heaven)**
Armillaria mellea
Botryosphaeria ribis var. *chromogena*
Cercospora glandulosa
Coniothyrium insitivum
Cytospora ailanthi
Daedalea unicolor
Fusarium lateritium
Gloeosporium ailanthi
Leptothyrium petiolorum
Nectria cinnabarina
N. coccinea
Phyllosticta ailanthi
Phymatotrichum omnivorum
Physalospora obtusa
P. rhodina
Polyporus versicolor
Schizophyllum commune
Verticillium albo-atrum

Albizia distachya (Vent.) Macbride **plume albizia**
Fusarium perniciosum

Albizia julibrissin Durazz. **silktree**
Botryosphaeria ribis
Coniothyrium insitivum
Fusarium lateritium
F. perniciosum
Nectria cinnabarina
N. coccinea
Physalospora rhodina
Schizophyllum commune
Thyronectria austro-americana

Albizia lebbek (L.) Benth. **lebbek**
Fusarium perniciosum

Aleurites fordii Hemsl. **tung-oil-tree**
Virus—rough bark
Botryosphaeria ribis
Clitocybe tabescens
Gloeosporium aleuriticum
Glomerella cingulata
Mycosphaerella aleuritidis
Pellicularia filamentosa
P. koleroga
P. rolfsii
Phymatotrichum omnivorum
Physalospora rhodina
Phytophthora cinnamomi

Aleurites montana (Lour.) E. H. Wils. **mu-oil-tree**
Pellicularia koleroga

Alnus glutinosa (L.) Gaertn. **European alder**
Phymatotrichum omnivorum
Polyporus versicolor
Septoria alni

Alsophila australis R. Br. **Australian treefern**
Armillaria mellea

Anacardium occidentale L. **cashew**
Pellicularia rolfsii

Annona cherimola Mill. **cherimoya**
Armillaria mellea
Clitocybe tabescens
Glomerella cingulata
Phakopsora cherimoliae

Annona squamosa L. **sugar-apple**
Phakopsora cherimoliae
Phymatotrichum omnivorum
Physalospora rhodina

Araucaria angustifolia (Bert.) Kuntze **Parana-pine**
Phymatotrichum omnivorum

Araucaria araucana (Molina) K. Koch **monkey-puzzle**
Pestalotia funerea

Araucaria bidwillii Hook **bunya-bunya-pine**
Agrobacterium tumefaciens

Arbutus unedo L. **strawberry madrone**
Agrobacterium tumefaciens
Elsinoë mattirolianum
Septoria unedonis

Arecastrum romanzoffianum (Cham.) Becc. **queen-palm**
Dothiorella gregaria
Exosporium palmivorum
Ganoderma zonatum
Glomerella cincta
Graphiola phoenicis
Penicillium vermoeseni
Pestalotia palmarum
Phytophthora palmivora

Arenga pinnata (Wurmb) Merr. **gomuti sugar-palm**
Graphiola phoenicis

Arundo donax L. **giant-reed**
Armillaria mellea
Papularia sphaerosperma
Puccinia coronata
Selenophoma donacis

Aucuba japonica Thunb. **Japanese aucuba**
Colletotrichum pollaccii
Glomerella cingulata
Pythium ultimum
Verticillium albo-atrum

Azara microphylla Hook. f. **boxleaf azara**
Pellicularia rolfsii

Baccharis pilularis DC. **kidneywort baccharis**
Virus—Pierce's vine disease

Bambusa spp. **bamboo**
Cylindrosporium bambusae
Guignardia bambusae
Papularia vinosa
Puccinia ignava
Selenophoma donacis
Ustilago shiraiana

Bambusa vulgaris Schrad. **common bamboo**
Papularia vinosa
Puccinia melanocephala

Bauhinia sp. **bauhinia**
Microsphaera diffusa

Bauhinia purpurea L. **purple bauhinia**
Clitocybe tabescens

Berberis spp. **barberry**
Cumminsiella sanguinea
Pythium debaryanum

Berberis thunbergii DC. **Japanese barberry**
Phymatotrichum omnivorum
Verticillium albo-atrum

Berberis vulgaris L. **European barberry**
Botrytis cinerea
Coniothyrium insitivum
Phyllactinia corylea
Phymatotrichum omnivorum
Rhizoctonia solani
Verticillium albo-atrum

Betula pendula Roth **European white birch**
Nectria galligena
Phyllosticta betulina
Phytophthora cinnamomi
Septoria betulicola
S. betulina

Broussonetia papyrifera (L.) Vent. **paper-mulberry**
Cercospora broussonetiae
Cercosporella mori
Nectria cinnabarina
Phymatotrichum omnivorum
Physalospora obtusa
Phoradendron flavescens

Buxus sp. **box**
Volutella buxi

Buxus sempervirens L. **common box**
Armillaria mellea
Nectria cinnabarina
Pythium ultimum

Buxus sempervirens var. **arborescens** L. **true-tree box**
Fomes igniarius
Fusarium buxicola
F. lateritium
F. oxysporum
F. solani
Ganoderma lucidum
Phyllosticta auerswaldii
Phymatotrichum omnivorum
Phytophthora parasitica
Pseudonectria rousseliana
Rhizoctonia solani
Volutella buxi

Buxus sempervirens var. **suffruticosa** L. **true-dwarf box**
Fusarium buxicola
F. lateritium
Hyponectria buxi
Phytophthora parasitica
Pseudonectria rousseliana
Rhizoctonia solani
Volutella buxi

Caesalpinia gilliesii Wall. **bird-of-paradise-flower**
Botryosphaeria ribis var. *chromogena*
Phymatotrichum omnivorum
Ravenelia humphreyana
Schizophyllum commune

Cajanus cajan (L.) Millsp. **pigeonpea**
Alternaria brassicae
Phyllosticta cajani
Phymatotrichum omnivorum
Physalospora rhodina

Callicarpa dichotoma (Lour.) K. Koch **purple beautyberry**
Cercospora callicarpae
Nectria cinnabarina
Physalospora obtusa

Callitris robusta R. Br. **sturdy cypress-pine**
Clitocybe tabescens

Camellia spp. **camellia**
Alternaria tenuis
Botrytis cinerea
Colletotrichum gloeosporioides
Papularia sphaerosperma
Sclerotinia sclerotiorum

Camellia japonica L. **common camellia**
Agrobacterium tumefaciens
Botryosphaeria ribis
Botrytis cinerea
Exobasidium camelliae
E. monosporum
Glomerella cingulata
Monochaetia camelliae
Pestalotia guepini
Phyllosticta camelliae
Phytophthora cinnamomi
Pythium ultimum
Sclerotinia camelliae
Sporonema camelliae

Camellia reticulata Lindl. **netvein camellia**
Sclerotinia camelliae

Camellia sasanqua Thunb. **sasanqua camellia**
Exobasidium camelliae
Sclerotinia camelliae

Camellia sinensis (L.) Kuntze **tea**
Glomerella cingulata
Guignardia camelliae
Pestalotia guepini

Caragana arborescens Lam. **Siberian pea-shrub**
Agrobacterium rhizogenes
Botrytis cinerea
Pellicularia filamentosa
Phyllosticta gallarum
Phymatotrichum omnivorum
Phytophthora cactorum

Carica papaya L. **papaya**
Asperisporium caricae
Asterina caricarum
Glomerella cingulata
Oidium caricae
Pellicularia rolfsii
Phyllosticta caricae-papayae
Phymatotrichum omnivorum
Pythium aphanidermatum
P. debaryanum

Carissa carandas L. **caranda**
Colletotrichum gloeosporioides

Carissa grandiflora A. DC. **Natal-plum**
Colletotrichum gloeosporioides
Phymatotrichum omnivorum
Physalospora obtusa
P. rhodina

Caryota sp. **fishtail-palm**
Glomerella cingulata

Cassia spp. **senna**
Physalospora abdita
P. rhodina

Cassia acutifolia Delile **Alexandria senna**
Cercospora nigricans
Microsphaera alni

Cassia artemisioides Gaud. **wormwood senna**
Phymatotrichum omnivorum
Physalospora rhodina

Cassia nodosa Hamilt. **jointwood senna**
Clitocybe tabescens

Castanea crenata Sieb. & Zucc. **Japanese chestnut**
Botryosphaeria ribis
B. ribis var. *chromogena*
Cryptodiaporthe castanea
Daedalea quercina
Endothia parasitica
Phytophthora cinnamomi
Stereum hirsutum

Castanea henryi (Skan) Rehd. & Wils. **Henry chinkapin**
Cryptodiaporthe castanea
Endothia parasitica
Phytophthora cinnamomi

Castanea mollissima Blume **Chinese chestnut**
Botryosphaeria ribis var. *chromogena*
Ceratocystis fagacearum
Cronartium cerebrum
Cryptodiaporthe castanea
Endothia parasitica
Marssonina ochroleuca
Phytophthora cinnamomi
Stereum gausapatum
S. hirsutum

Castanea sativa Mill. **European chestnut**
Actinopelte dryina
Ceratocystis fagacearum
Cryptodiaporthe castanea
Endothia parasitica
Exosporina fawcetti
Marssonina ochroleuca
Microsphaera alni
Phyllactinia corylea
Phyllosticta castanea
Phymatotrichum omnivorum
Phytophthora cinnamomi
Schizophyllum commune
Stereum hirsutum

Castanea seguinii Dode — **Seguin chinkapin**
Endothia parasitica
Phytophthora cinnamomi

Castanopsis kawakamii Hayata — **Japanese evergreen-chinkapin**
Ceratocystis fagacearum

Casuarina spp. — **casuarina**
Armillaria mellea
Clitocybe tabescens

Casuarina equisetifolia L. — **horsetail casuarina**
Clitocybe tabescens

Casuarina glauca Sieber — ———
Clitocybe tabescens

Casuarina lepidophloia F. Muell. — **scalybark casuarina**
Clitocybe tabescens

Casuarina montana Leschen — ———
Clitocybe tabescens

Casuarina stricta Ait. — **coast casuarina**
Clitocybe tabescens

Catalpa bungei C. A. Mey. — **Manchurian catalpa**
Microsphaera alni

Catha edulis Forsk. — **Arabian-tea**
Colletotrichum gloeosporioides

Cecropia palmata Willd. — **silverleaf pumpwood**
Clitocybe tabescens

Cedrela sinensis Juss. — **Chinese cedrela**
Schizophyllum commune

Cedrus deodara (Roxb.) Loud. — **Deodar cedar**
Phytophthora cactorum
P. cinnamomi

Celastrus sp. — **bittersweet**
Agrobacterium tumefaciens

Ceratonia siliqua L. — **carob (St. Johns-bread)**
Botryosphaeria ribis
Phymatotrichum omnivorum
Phytophthora cactorum
Verticillium albo-atrum

Cercis chinensis Bunge — **Chinese redbud**
Botryosphaeria ribis
B. ribis var. *chromogena*
Cercospora chionea
Mycosphaerella cercidicola

Cestrum sp. — **cestrum (jessamine)**
Uromyces cestri

Chamaecyparis spp. — **false-cypress**
Pestalotia funerea
Phomopsis juniperovora
Phymatotrichum omnivorum

Chamaecyparis obtusa (Sieb. & Zucc.) Endl. — **hinoki false-cypress**
Armillaria mellea
Phytophthora lateralis

Cinchona officinalis L. — ———
Cercospora cinchonae

Cinnamomum camphora (L.) Nees & Eberm. — **camphor-tree**
Armillaria mellea
Botryosphaeria ribis
Clitocybe tabescens
Diplodia camphorae
Glomerella cingulata
Lembosia camphorae
Microsphaera alni
Pellicularia koleroga
Phymatotrichum omnivorum
Physalospora rhodina
Phoradendron flavescens

Cinnamomum zeylanicum Blume — **Ceylon cinnamon**
Colletotrichum cinnamomi
Glomerella cingulata

Clausena lansium (Lour.) Skeels — **Chinese wampee**
Elsinoë fawcetti
Glomerella cingulata

Cocos nucifera L. — **coconut**
Endoconidiophora paradoxa
Pellicularia koleroga
Pestalotia palmarum
Physalospora abdita
P. rhodina
Phytophthora palmivora

Codiaeum variegatum (L.) Blume — **variegated leaf-croton**
Glomerella cingulata
Phymatotrichum omnivorum

Colutea arborescens L. — **bladder-senna**
Erysiphe polygoni
Phytophthora cactorum
Uromyces coluteae

Coprosma baueri Endl. — **hedge coprosma**
Virus—Pierce's vine disease

Cordyline spp. — **dracena**
Glomerella cincta
Phyllosticta dracaenae

Corylus avellana L. **European filbert**
Agrobacterium tumefaciens
Xanthomonas corylina
Apioporthe anomala
Armillaria mellea
Gloeosporium coryli
Physalospora obtusa
Taphrina coryli

Corylus maxima Mill. **giant filbert**
Xanthomonas corylina
Phyllactinia corylea

Cotinus coggygria Scop. **common smoketree**
Cercospora rhoina
Phymatotrichum omnivorum
Physalospora obtusa
Septoria rhoina
Verticillium albo-atrum

Cotoneaster spp. **cotoneaster**
Agrobacterium rhizogenes
Armillaria mellea
Clitocybe tabescens
Fabraea maculata
Nectria cinnabarina
Phymatotrichum omnivorum
Physalospora obtusa

Cotoneaster rotundifolia Lindl. **redbox cotoneaster**
Virus—Pierce's vine disease

Crassula sp. **crassula**
Glomerella cingulata

Crassula argentea L. f. **silver crassula**
Armillaria mellea

Cryptomeria japonica (L. f.) D. Don **Japanese cryptomeria**
Pestalotia cryptomeriae
P. funerea

Cunninghamia lanceolata (Lamb.) Hook. **common China-fir**
Agrobacterium tumefaciens

Cupressus duclouxiana Hickel **Bhutan cypress**
Agrobacterium tumefaciens

Cupressus lusitanica Mill. **Mexican cypress**
Agrobacterium tumefaciens

Cupressus sempervirens L. **Italian cypress**
Agrobacterium tumefaciens
Cercospora thujina
Clitocybe tabescens
Coryneum asperulum
C. berckmanii
C. cardinale
Fusarium solani
Pestalotia funerea
Phomopsis juniperovora
Phymatotrichum omnivorum
Phytophthora cinnamomi
Valsa cenisia

Cycas revoluta Thunb. **sago cycas**
Ascochyta cycadina
Glomerella cingulata
Pestalotia cycadis

Cyphomandra betacea (Cav.) Sendt. **tree-tomato**
Corynebacterium michiganense

Cytisus spp. **broom**
Nectria coccinea
Physalospora obtusa

Cytisus scoparius (L.) Link **Scotch broom**
Virus—Pierce's vine disease

Daphne spp. **daphne**
Gloeosporium mezerei
Nectria cinnabarina
Pellicularia rolfsii
Phytophthora cactorum
Rhizoctonia solani

Daphne odora Thunb. **winter daphne**
Phytophthora parasitica
Pythium ultimum

Delonix regia (Bojer) Raf. **flamboyant-tree (royal poinciana)**
Clitocybe tabescens

Deutzia sp. **deutzia**
Phyllosticta deutziae

Deutzia gracilis Sieb. & Zucc. **slender deutzia**
Cercospora deutziae

Deutzia scabra Thunb. **fuzzy deutzia**
Armillaria mellea

Diospyros ebenaster Retz. **persimmon**
Cephalosporium diospyri

Diospyros kaki L. f. **kaki persimmon**
Cephalosporium diospyri
Pellicularia koleroga

Diospyros lotus L. **dateplum persimmon**
Cephalosporium diospyri

Doxantha unguis-cati (L.) Rehd. **catclaw funnel-creeper**
Phymatotrichum omnivorum

Dracaena spp. **dracaena**
Dermascia dracaenae
Gloeosporium polymorphum

Glomerella cincta
Phyllosticta draconis
Physalospora rhodina

Dracaena fragrans Ker. **fragrant dracaena**
Physalospora dracaenae

Duranta sp. **skyflower**
Phyllachora fusicarpa

Duranta repens L. **creeping skyflower**
Virus—Pierce's vine disease

Elaeagnus angustifolia L. **Russian-olive**
Agrobacterium rhizogenes
A. tumefaciens
Cercospora elaeagni
Nectria cinnabarina
Pellicularia rolfsii
Phyllosticta argyrea
Phymatotrichum omnivorum
Phytophthora cactorum
Septoria argyraea
S. elaeagni
Valsa ambiens

Elaeagnus pungens Thunb. **thorny elaeagnus**
Rhizoctonia ramicola

Erica spp. **heath**
Erysiphe polygoni
Phytophthora cinnamomi
Pucciniastrum ericae

Erica australis L. **southern heath**
Verticillium albo-atrum

Erica subdivaricata Bergius **garland heath**
Phytophthora cinnamomi
Verticillium albo-atrum

Eriobotrya japonica (Thunb.) Lindl. **loquat (Japanese medlar)**
Clitocybe tabescens

Eucalyptus spp. **eucalyptus**
Agrobacterium tumefaciens
Armillaria mellea
Botryosphaeria ribis
Botrytis cinerea
Fomes robustus
Phytophthora cactorum
Septoria mortolensis

Eucalyptus camaldulensis Dehnh. **longbeak eucalyptus**
Fusarium oxysporum var. *aurantiacum*
Phymatotrichum omnivorum

Eucalyptus globulus Labill. **Tasmanian blue eucalyptus (Tasmanium bluegum)**
Actinopelte dryina
Fomes applanatus
Fusarium oxysporum var. *aurantiacum*
Hendersonia eucalypticola
Monochaetia desmazierii
Mycosphaerella molleriana
Phyllosticta extensa
Physalospora latitans
P. rhodina
Polyporus gilvus
P. hirsutus
P. schweinitzii
P. sulphureus
P. versicolor
Poria cocos
Stereum hirsutum

Eucalyptus robusta J. E. Smith **beakpod eucalyptus (swamp mahogany)**
Clitocybe tabescens
Fusarium oxysporum var. *aurantiacum*

Eugenia paniculata Banks var. **australis** (Wedl.) Bailey **Australian brush-cherry eugenia**
Virus—Pierce's vine disease

Eugenia uniflora L. **pitanga**
Clitocybe tabescens

Euonymus spp. **euonymus**
Colletotrichum griseum
Coniothyrium fuckelii
Cytospora evonymi
Polyporus hirsutus

Euonymus alatus (Thunb.) Sieb. **winged euonymus**
Botrytis cinerea
Microsphaera alni

Euonymus europaeus L. **European euonymus**
Phyllosticta pallens

Euonymus fortunei (Turcz.) Hand.-Mazz. **wintercreeper euonymus**
Agrobacterium tumefaciens
Phyllosticta euonymella

Euonymus japonicus L. **evergreen euonymous**
Agrobacterium tumefaciens
Cercospora destructiva
Colletotrichum griseum

Exosporium concentricum
Fusarium lateritium
Gloeosporium frigidum
Glomerella cingulata
Microsphaera alni
Oidium euonymi-japonici
Pellicularia koleroga
Phyllosticta euonymella
Phymatotrichum omnivorum
Pythium ultimum
Ramularia euonymi
Septoria evonymella
S. evonymi

Euphorbia milii Ch. des Moulins **crown-of-thorns euphorbia**
Phymatotrichum omnivorum
Verticillium albo-atrum

Euphorbia pulcherrima Willd. **common poinsettia**
Corynebacterium poinsettiae
Botryosphaeria ribis
Botrytis cinerea
Cercospora pulcherrimae
Clitocybe tabescens
Colletotrichum gloeosporioides
Phymatotrichum omnivorum
Pythium debaryanum
P. perniciosum
P. ultimum
Rhizoctonia solani
Sclerotinia sclerotiorum
Sphaceloma poinsettiae

Exochorda racemosa (Lindl.) Rehd. **common pearlbush**
Corticium galactinum

Fagus sylvatica L. **European beech**
Armillaria mellea
Endothia gyrosa
Nectria cinnabarina
Phytophthora cactorum

Feijoa sellowiana Berg **feijoa**
Botrytis cinerea
Colletotrichum gloeosporioides
Phymatotrichum omnivorum
Rhizoctonia ramicola

Feronia limonia (L.) Swingle **woodapple**
Xanthomonas citri

Ficus carica L. **common fig**
Virus—mosaic
Agrobacterium tumefaciens
Armillaria mellea
Ascochyta caricae
Botryosphaeria ribis
Botrytis cinerea
Cephalosporium fici
Cercospora fici
C. ficina
Corticium salmonicolor
Glomerella cingulata
Mycosphaerella bolleana
Nectria cinnabarina
Ormathodium fici
Pellicularia koleroga
P. rolfsii
Phomopsis cinerascens
Physalospora abdita
P. obtusa
P. rhodina
Physopella fici
Rhizoctonia microsclerotia
Schizophyllum commune
Sclerotinia sclerotiorum

Ficus elastica Roxb. **India-rubber fig**
Agrobacterium tumefaciens
Clitocybe tabescens
Glomerella cingulata
Leptostromella elastica
Mycosphaerella bolleana
Phyllosticta roberti
Physalospora rhodina
Trabutia ficuum

Ficus pumila L. **climbing fig**
Pellicularia rolfsii

Firmiana platanifolia (L. f.) Schott & Endl. **Chinese parasol-tree**
Botryosphaeria ribis
Nectria cinnabarina
Phymatotrichum omnivorum
Rhizoctonia microsclerotia

Forsythia spp. **forsythia**
Agrobacterium tumefaciens
Pellicularia rolfsii
Phyllosticta discincola
P. terminalis
Phymatotrichum omnivorum
Sclerotinia sclerotiorum

Forsythia suspensa (Thunb.) Vahl **weeping forsythia**
Alternaria forsythiae
Botryosphaeria ribis

Fuchsia spp. **fuchsia**
Botrytis cinerea
Pythium ultimum
Verticillium albo-atrum

Garcinia mangostana L. **mangosteen**
Glomerella cingulata

Gardenia jasminoides Ellis **cape-jasmine**
Xanthomonas maculifolium-gardeniae
Erysiphe polygoni
Phomopsis gardeniae
Phymatotrichum omnivorum
Pythium ultimum
Sphaerella gardeniae

Genista spp. **woadwaxen**
Erysiphe polygoni
Physalospora obtusa
Uromyces genistae-tinctoriae

Ginkgo biloba L. **ginkgo (maidenhair-tree)**
Fomes connatus
Glomerella cingulata
Phyllosticta ginkgo
Phymatotrichum omnivorum
Polyporus hirsutus
P. versicolor

Gleditsia japonica Miq. **Japanese honeylocust**
Thyronectria austro-americana

Gossypium arboreum L. **Asiatic tree cotton**
Xanthomonas malvacearum
Phakopsora desmium

Gossypium barbadense L. **Sea Island cotton**
Xanthomonas malvacearum
Phakopsora desmium

Gossypium hirsutum L. **upland cotton**
Phakopsora desmium

Gouania sp. **chawstick**
Puccinia invaginata

Grevillea sp. **grevillea**
Phymatotrichum omnivorum

Hakea sp. **hakea**
Phytophthora cactorum

Hebe sp. **hebe**
Septoria exotica

Hedera helix L. **English ivy**
Virus—Pierce's vine disease
Xanthomonas hederae
Amerosporium trichellum
Glomerella cingulata
Phymatotrichum omnivorum
Physalospora obtusa
Pythium ultimum
Ramularia hedericola
Rhizoctonia solani

Helianthemum nummularium (L.) Mill. **sunrose**
Phymatotrichum omnivorum

Heliotropium arborescens L. **common heliotrope**
Botrytitis cinerea
Verticillium albo-atrum

Hevea brasiliensis Muell.-Arg. **Para rubber-tree**
Glomerella cingulata
Helminthosporium heveae
Ophiobolus heveae
Phomopsis heveae
Phyllosticta heveae

Hibiscus spp. **hibiscus**
Agrobacterium tumefaciens
Alternaria tenuis
Botryosphaeria ribis
Fusarium lateritium
Nectria cinnabarina
Pellicularia koleroga
Phomopsis malvacearum
Physalospora abdita
P. obtusa

Hibiscus cardiphyllus A. Gray ———
Puccinia heterospora

Hibiscus mutabilis L. **cottonrose hibiscus**
Phyllosticta hibiscina

Hibiscus rosa-sinensis L. **Chinese hibiscus**
Cercospora abelmoschi
Clitocybe tabescens
Colletotrichum hibisci
Pellicularia filamentosa
Phytophthora cactorum
P. palmivora

Hibiscus schizopetalus Hook. f. **fringed hibiscus**
Phytophthora cactorum
P. palmivora

Hibiscus syriacus L. **shrub-althea**
Cercospora malayensis
Kuehneola malvicola
Phyllosticta hibiscina
P. syriaca
Phymatotrichum omnivorum

Hippocratea obtusifolia Roxb. ———
Agrobacterium tumefaciens

Homalocladium platycladum (F.Muell.) Bailey **ribbonbush**
Erysiphe polygoni

Hydrangea macrophylla (Thunb.) Ser. **bigleaf hydrangea**
Ascochyta hydrangeae
Botrytis cinerea

Cercospora hydrangeae
Erysiphe polygoni
Rhizoctonia solani

Hydrangea paniculata Sieb. **panicle hydrangea**
Virus—Pierce's vine disease
Ascochyta hydrangeae
Botrytis cinerea
Cercospora hydrangeae
Erysiphe polygoni
Nectria cinnabarina
Pellicularia rolfsii
Phymatotrichum omnivorum
Polyporus versicolor
Pythium ultimum
Septoria hydrangeae

Ilex spp. **holly**
Phyllosticta opacae
Physalospora obtusa

Ilex aquifolium L. **English holly**
Boydia insculpta
Gloeosporium aquifolii
Physalospora ilicis
Polyporus hirsutus
Rhizoctonia solani

Ilex cornuta Lindl. **Chinese holly**
Elsinoë ilicis

Ilex crenata Thunb. **Japanese holly**
Physalospora ilicis

Ilex rotunda Thunb. ——
Cylindrocladium scoparium

Indigofera spp. **indigo**
Nectria cinnabarina
Phymatotrichum omnivorum
Ravenelia laevis
Uromyces indigoferae

Indigofera miniata Ortega ——
Uromyces indigoferae

Ixora sp. **ixora**
Clitocybe tabescens

Jacaranda acutifolia Humb. & Bonpl. **sharpleaf jacaranda**
Armillaria mellea
Phymatotrichum omnivorum

Jasminum spp. **jasmine**
Agrobacterium tumefaciens
Clitocybe tabescens
Colletotrichum gloeosporioides
Corticium galactinum
Pellicularia rolfsii
Physalospora obtusa

Jasminum nudiflorum Lindl. **winter jasmine**
Corticium galactinum

Jatropha curcas L. **Barbados-nut**
Clitocybe tabescens
Colletotrichum gloeosporioides
Phakopsora jatrophicola

Juglans ailantifolia Carr. **Siebold walnut**
Virus—witches'-broom
Melanconis juglandis
Phytophthora cactorum

Juglans ailantifolia var. **cordiformis** (Makino) Rehd. **flat Siebold walnut**
Xanthomonas juglandis
Melanconis juglandis

Juglans regia L. **Persian walnut**
Agrobacterium tumefaciens
Xanthomonas juglandis
Armillaria mellea
Ascochyta juglandis
Cylindrosporium juglandis
Dothiorella gregaria
Erysiphe polygoni
Exosporina fawcetti
Fusarium lateritium
Gnomonia leptostyla
Melanconis juglandis
Microstroma juglandis
Phleospora multimaculans
Phomopsis juglandina
Phyllosticta juglandina
Phymatotrichum omnivorum
Phytophthora cactorum
P. cinnamomi
Schizophyllum commune

Juniperus cedrus Webb. & Berth. **Canary Island juniper**
Agrobacterium tumefaciens

Juniperus chinensis L. **Chinese juniper**
Agrobacterium tumefaciens
Coryneum cardinale
Gymnosporangium haraeanum
G. japonicum
Lophodermium juniperinum
Pestalotia funerea
Phomopsis juniperovora
Phymatotrichum omnivorum

Juniperus chinensis var. **sargentii** Henry **Sargent Chinese juniper**
Lophodermium juniperinum

Juniperus excelsa Bieb.
Greek juniper
Lophodermium juniperinum
Pestalotia funerea
Phomopsis juniperovora

Juniperus phoenicea L.
Phoenicean juniper
Agrobacterium tumefaciens

Juniperus procera Hochst.
African juniper
Agrobacterium tumefaciens
Phytophthora cactorum

Juniperus sabina L. **savin juniper**
Agrobacterium tumefaciens
Coryneum cardinale
Lophodermium juniperinum
Phomopsis juniperovora
Phytophthora cactorum

Kalanchoë daigremontiana Hamet & Perrier ——
Agrobacterium tumefaciens

Kalanchoë laciniata DC. ——
Phytophthora cactorum
Sphaerotheca humuli

Kalanchoë pinnata Pers. **airplant**
Agrobacterium tumefaciens
Physalospora rhodina

Kerria japonica (L.) DC.
Japanese kerria (globe-flower)
Nectria cinnabarina
Phomopsis japonica
Phymatotrichum omnivorum

Koelreuteria spp. **goldenrain-tree**
Nectria cinnabarina
Phymatotrichum omnivorum
Physalospora obtusa

Kolkwitzia amabilis Graebn.
beautybush
Cercospora kolkwitziae

Laburnum anagyroides Med.
golden-chain laburnum
Botryosphaeria ribis
Cercospora laburni
Nectria cinnabarina

Lagerstroemia indica L.
common crapemyrtle
Botryosphaeria ribis
Cercospora lythracearum
Clitocybe tabescens
Erysiphe lagerstroemiae
Pellicularia koleroga
Phyllactinia corylea
Phyllosticta lagerstroemiae
Phymatotrichum omnivorum
Physalospora obtusa
Rhizoctonia ramicola
Uncinula australiana

Larix decidua Mill. **European larch**
Dasyscypha ellisiana
Fomes pini
Melampsora bigelowii
Phytophthora cinnamomi
Stereum sanguinolentum
Trichoscyphella willkommii
Valsa kunzei

Larix leptolepis (Sieb. & Zucc.) Gord.
Japanese larch
Cylindrocladium scoparium
Dasyscypha ellisiana
Phytophthora cinnamomi
Trichoscyphella willkommii

Laurus nobilis L.
Grecian laurel (true bay)
Pellicularia koleroga

Lavandula officinalis Chaix
true lavendar
Armillaria mellea

Lavatera arborea L.
velvet tree-mallow
Rhizoctonia solani

Ligustrum spp. **privet**
Agrobacterium tumefaciens
Armillaria mellea
Botryosphaeria ribis
Cercospora adusta
C. ligustri
Clitocybe tabescens
Exposporium concentricum
Fomes applanatus
Microsphaera alni
Pellicularia koleroga
Phymatotrichum omnivorum
Physalospora obtusa
Polyporus versicolor
Rosellinia necatrix
Stereum hirsutum

Ligustrum amurense Carr.
Amur privet
Clitocybe tabescens

Ligustrum ovalifolium Hassk.
California privet
Cercospora adusta
Pythium ultimum

Ligustrum vulgare L.
European privet
Glomerella cingulata

Lithocarpus glaber (Thunb.) Nakai ——
Ceratocystis fagacearum
Lonicera japonica (Thunb.) **Japanese honeysuckle**
Virus—Pierce's vine disease
Agrobacterium tumefaciens
Cercospora lonicerae
Pellicularia koleroga
Phoma mariae
Physalospora obtusa
Lonicera morrowii A. Gray **Morrow honeysuckle**
Armillaria mellea
Herpobasidium deformans
Microsphaera alni
Phymatotrichum omnivorum
Lonicera tatarica L. **Tatarian honeysuckle**
Agrobacterium rhizogenes
A. tumefaciens
Botrytis cinerea
Herpobasidium deformans
Microsphaera alni
Phoma mariae
Phymatotrichum omnivorum
Lycium chinense Mill. **Chinese wolfberry**
Erysiphe polygoni
Lycium halimifolium Mill. **matrimony vine**
Erysiphe polygoni
Microsphaera diffusa
Sphaerotheca pannosa
Maackia amurensis Rupr. **Amur maackia**
Phymatotrichum omnivorum
Magnolia ×**soulangiana** Soul. **saucer magnolia**
Cylindrocladium scoparium
Malachra capitata L. ——
Cercospora malachrae
Mallotus japonicus Muell.-Arg. ——
Cercospora malloti
Malvaviscus arboreus Cav. **South American waxmallow**
Clitocybe tabescens
Malvaviscus arboreus var. **drummondii** (Torr. & Gray) Scherry **Drummond waxmallow**
Helicobasidium purpureum
Malvaviscus arboreus var. **penduliflorus** (DC.) Scherry **bigflower waxmallow**
Clitocybe tabescens
Mangifera indica L. **mango**
Elsinoë mangiferae
Glomerella cingulata
Pestalotia mangiferae
Phyllosticta mortoni
Phymatotrichum omnivorum
Physalospora abdita
P. rhodina
Manihot esculenta Crantz **common cassava**
Cercospora henningsii
Phymatotrichum omnivorum
Physalospora abdita
P. rhodina
Rhizoctonia solani
Melia azedarach L. **chinaberry**
Virus—witches'-broom
Botryosphaeria ribis
Cercospora meliae
C. subsessilis
Fusarium lateritium
Glomerella cingulata
Helicobasidium purpureum
Nectria cinnabarina
N. coccinea
Pellicularia koleroga
Phyllactinia corylea
Phyllosticta azedarachis
P. meliae
Phymatotrichum omnivorum
Physalospora abdita
P. obtusa
P. rhodina
Schizophyllum commune
Phoradendron flavescens
Michelia fuscata Blume **banana-shrub**
Pellicularia koleroga
Montezuma speciosissima Sessé & Moç. **maga**
Glomerella cingulata
Morus alba L. **white mulberry**
Agrobacterium rhizogenes
Armillaria mellea
Botryosphaeria ribis
Cercospora moricola
Cercosporella mori
Ciboria carunculoides
Dothiorella mori

Helicobasidium purpureum
Mycosphaerella mori
Nectria cinnabarina
N. coccinea
Phymatotrichum omnivorum
Physalospora obtusa
Polyporus farlowii
P. hispidus
Rosellinia aquila
Schizophyllum commune
Sclerotinia sclerotiorum

Myrtus communis L. **true myrtle**
Pellicularia rolfsii
Pestalotia decolorata
Phytophthora cinnamomi

Nandina domestica Thunb. **nandina**
Cercospora nandinae
Glomerella cingulata
Phymatotrichum omnivorum

Nerium oleander L. **oleander**
Cercospora repens
Clitocybe tabescens
Phyllosticta nerii
Phymatotrichum omnivorum
Physalospora obtusa
Septoria oleandrina

Nicotiana glauca Graham **tree tobacco**
Virus—mosaic
Alternaria longipes
Phymatotrichum omnivorum

Oncoba spinosa Forsk. **spiny oncoba**
Phymatotrichum omnivorum

Osmanthus ×fortunei Carr. **Fortunes osmanthus**
Phyllosticta osmanthi

Osmanthus fragrans Lour. **sweet osmanthus**
Armillaria mellea
Gloeosporium oleae

Osmanthus ilicifolius (Hassk.) Mouillef. **holly osmanthus**
Phyllosticta oleae
P. sinuosa
Phymatotrichum omnivorum
Rosellinia necatrix

Pandanus spp. **screwpine**
Colletotrichum gloeosporioides
Pestalotia palmarum

Parkinsonia spp. **parkinsonia**
Clitocybe tabescens
Phymatotrichum omnivorum
Phoradendron californicum

Parthenium argentatum A. Gray **guayule**
Erwinia carotovora f. *parthenii*
Botrytis cinerea
Fusarium solani
Phymatotrichum omnivorum
Physalospora rhodina
Phytophthora drechsleri
Pythium ultimum
Sclerotinia sclerotiorum
Sclerotium bataticola
Verticillium albo-atrum

Parthenocissus tricuspidata (Sieb. & Zucc.) Planch. **Japanese creeper**
Virus—Pierce's vine disease

Paulownia tomentosa (Thunb.) Sieb. & Zucc. **royal paulownia**
Ascochyta paulowniae
Phomopsis imperialis
Phyllosticta paulowniae
Phymatotrichum omnivorum
Physalospora obtusa
Polyporus spraguei
P. versicolor

Persea americana Mill. **avocado**
Armillaria mellea
Botryosphaeria ribis var. *chromogena*
Clitocybe tabescens
Glomerella cingulata
Irene perseae
Mycosphaerella perseae
Pellicularia rolfsii
Phyllosticta micropuncta
Phymatotrichum omnivorum
Physalospora abdita
P. rhodina
Phytophthora cactorum
P. cinnamomi
P. palmivora
P. parasitica
Pythium ultimum
Rosellinia necatrix
Sclerotinia sclerotiorum
Sphaceloma perseae
Verticillium albo-atrum

Philodendron sp. **philodendron**
Colletotrichum philodendri

Phoenix canariensis Chabaud **Canary date**
Armillaria mellea
Clitocybe tabescens
Exosporium palmivorum

Graphiola phoenicis
Omphalia tralucida
Penicillium vermoeseni
Pestalotia palmarum
Physalospora rhodina

Phoenix dactylifera L. **date**
Ceratostomella radicicola
Endoconidiophora paradoxa
Exosporium palmivorum
Graphiola phoenicis
Omphalia pigmentata
O. tralucida
Phymatotrichum omnivorum

Photinia glabra (Thunb.) Maxim. **Japanese photinia**
Podosphaera leucotricha

Photinia serrulata Lindl. **Chinese photinia**
Phymatotrichum omnivorum
Sphaerotheca pannosa

Photinia villosa (Thunb.) DC. **Oriental photinia**
Erwinia amylovora
Gymnosporangium clavipes

Phyllostachys aurea Carr. **golden bamboo**
Puccinia melanocephala

Phyllostachys bambusoides Sieb. & Zucc. **Japanese timber bamboo**
Papularia vinosa
Puccinia melanocephala
Ustilago shiraiana

Phyllostachys nigra (Lodd.) Munro **black bamboo**
Ustilago shiraiana

Phyllostachys nigra var. **henonis** (Mitf.) Stapf **Henon bamboo**
Ustilago shiraiana

Picea abies (L.) Karst. **Norway spruce**
Ascochyta piniperda
Botryosphaeria ribis
Botrytis cinerea
Chrysomyxa pyrolae
Cylindrocladium scoparium
Diplodia pinea
Fomes annosus
Ganoderma lucidum
Herpotrichia nigra
Lophodermium piceae
Peridermium coloradense
Pestalotia funerea
Phoma piceina
Phytophthora cinnamomi
Polyporus schweinitzii
P. versicolor
Pythium irregulare
Rhizoctonia solani
Sclerotium bataticola
Stereum sanguinolentum
Valsa kunzei

Picea orientalis (L.) Link **Oriental spruce**
Valsa kunzei

Pieris japonica (Thunb.) D. Don **Japanese pieris**
Armillaria mellea
Phyllosticta andromedae

Pinus armandii Franch. **Armand pine**
Lophodermium pinastri

Pinus canariensis C. Smith **Canary pine**
Cronartium harknessii
Phytophthora cinnamomi

Pinus cembra L. **Swiss stone pine**
Cronartium ribicola
Dasyscypha ellisiana

Pinus densiflora Sieb. & Zucc. **Japanese red pine**
Atropellis tingens
Cronartium cerebrum
C. comptoniae
Fomes annosus
Polyporus schweinitzii

Pinus griffithii McClelland **Himalayan pine**
Cronartium ribicola
Diplodia pinea
Hypoderma desmazierii
Lophodermium nitens
Physalospora obtusa
Valsa kunzei

Pinus halepensis Mill. **Aleppo pine**
Botrytis cinerea
Cronartium harknessii
Scirrhia acicola

Pinus koraiensis Sieb. & Zucc. **Korean pine**
Lophodermium pinastri

Pinus mugo Turra **Swiss mountain pine**
Coleosporium solidaginis
C. vernoniae
Cronartium comptoniae
C. filamentosum
Diplodia pinea

Lophodermium pinastri
Pestalotia funerea
Rhizoctonia solani

Pinus mugo var. **mughus** (Scop.) Zenari **mugho Swiss mountain pine**
Diplodia pinea

Pinus nigra Arnold **Austrian pine**
Atropellis tingens
Cenangium abietis
Coleosporium delicatulum
C. senecionis
C. solidaginis
C. vernoniae
Cronartium cerebrum
C. comandrae
C. comptoniae
Dasyscypha ellisiana
Diplodia pinea
Dothichiza pithyophila
Dothistroma pini
Hypoderma desmazierii
H. lethale
Leptothyrium pinastri
Lophodermium pinastri
Naemacyclus niveus
Physalospora obtusa
Phytophthora cactorum
Pythium artotrogus
P. debaryanum
Rhizoctonia solani
Scirrhia acicola

Pinus nigra var. **poiretiana** Schneid. **Corsican pine**
Cronartium cerebrum
Dothistroma pini
Rhizoctonia solani
Scirrhia acicola

Pinus parviflora Sieb. & Zucc. **Japanese white pine**
Cronartium ribicola
Lophodermium pinastri

Pinus pinaster Ait. **cluster pine**
Bifusella striiformis
Cronartium cerebrum
Scirrhia acicola

Pinus pinea L. **Italian stone pine**
Diplodia pinea
Scirrhia acicola

Pinus sylvestris L. **Scotch pine**
Atropellis tingens
Cenangium abietis
Coleosporium campanulae
C. solidaginis
C. sonchi-arvensis
C. vernoniae
Cronartium cerebrum
C. comandrae
C. comptoniae
C. harknessii
Cylindrocladium scoparium
Cytospora pinastri
Dasyscypha ellisiana
Diplodia pinea
Fomes annosus
F. pini
Hypoderma desmazierii
Lophodermium pinastri
Naemacyclus niveus
Pestalotia funerea
Phytophthora cactorum
P. cinnamomi
Polyporus schweinitzii
Pythium ultimum
Rhizoctonia solani
Scirrhia acicola

Pinus thunbergii Parl. **Japanese black pine**
Coleosporium solidaginis
Cronartium cerebrum
Lophodermium pinastri
Polyporus schweinitzii
Scirrhia acicola

Pistacia chinensis Bunge **Chinese pistache**
Pellicularia koleroga
Phymatotrichum omnivorum
Physalospora obtusa

Pistacia vera L. **common pistache**
Cercospora pistaciae
Pellicularia koleroga
Phyllosticta lentisci
Phymatotrichum omnivorum
Verticillium albo-atrum

Pithecellobium dulce (Roxb.) Benth. **guamachil apes-earring**
Clitocybe tabescens

Pittosporum spp. **pittosporum**
Pellicularia koleroga
P. rolfsii
Phymatotrichum omnivorum
Physalospora rhodina
Verticillium albo-atrum

Pittosporum crassifolium Soland. **karo pittosporum**
Virus—Pierce's vine disease

Pittosporum daphniphylloides Hay. **daphne pittosporum**
Virus (undetermined)—mosaic
Pittosporum tobira Ait. **tobira pittosporum**
Virus—rough bark
Cercospora pittospori
Pellicularia koleroga
Rhizoctonia ramicola
Platanus ×acerifolia (Ait.) Willd. **London planetree**
Ceratocystis fimbriata f. *platani*
Gnomonia veneta
Microsphaera alni
Platanus orientalis L. **Oriental planetree**
Gnomonia veneta
Microsphaera alni
Oidium obductum
Phytophthora cinnamomi
Stigmina platani
Plumeria spp. **frangipani**
Phymatotrichum omnivorum
Phoradendron flavescens
Plumeria rubra L. **Mexican frangipani**
Coleosporium domingense
Podocarpus elongatus L'Hér. **fern podocarpus**
Agrobacterium tumefaciens
Populus alba L. **white poplar**
Agrobacterium tumefaciens
Cercospora populina
Didymosphaeria populina
Dothichiza populea
Fomes applanatus
Melampsora abietis-canadensis
M. aecidioides
M. occidentalis
Mycosphaerella maculiformis
Phyllosticta alcides
Phymatotrichum omnivorum
Physalospora obtusa
Polyporus hirsutus
Pseudopeziza populi-albae
Septoria musiva
Taphrina johansonii
Valsa nivea
V. sordida
Populus ×berolinensis Dipp. **Berlin poplar**
Septoria musiva
Populus maximowiczii Henry **Japanese poplar**
Septoria musiva
Populus nigra L. **black poplar**
Septoria musiva
Taphrina populina
Populus nigra var. **italica** Muenchh. **Lombardy poplar**
Corynebacterium humiferum
Didymosphaeria populina
Dothichiza populea
Taphrina populina
Valsa sordida
Populus ×petrowskyana Schneid. **Petrowsky poplar**
Septoria musiva
Populus ×razoumowskyana Schneid. **Razoumofsky poplar**
Septoria musiva
Populus simonii Carr. **Simon poplar**
Valsa sordida
Pouteria spp. (Lucuma) ——
Colletotrichum gloeosporioides
Physalospora obtusa
Prunus glandulosa Thunb. **almond cherry**
Corticium galactinum
Prunus laurocerasus L. **common laurelcherry**
Armillaria mellea
Prunus serrulata Lindl. **Oriental cherry**
Catenophora pruni
Prunus triloba Lindl. **flowering plum**
Corticium galactinum
Pseudolarix amabilis (Nels.) Rehd. **golden-larch**
Trichoscyphella willkommii
Psidium cattleianum Sabine **Cattley guava**
Clitocybe tabescens
Psidium guajava L. **common guava**
Botryosphaeria ribis var. *chromogena*
Cercospora psidii
Clitocybe tabescens
Glomerella cingulata
Pellicularia koleroga
Phymatotrichum omnivorum
Phytophthora cactorum
Polyporus versicolor
Punica granatum L. **pomegranate**
Botrytis cinerea
Clitocybe tabescens
Colletotrichum gloeosporioides
Pellicularia koleroga
Phymatotrichum omnivorum

Pyracantha coccinea Roem. **scarlet firethorn**
Erwinia amylovora
Armillaria mellea
Botryosphaeria ribis
Fusicladium pyracanthae
Phymatotrichum omnivorum
Physalospora obtusa

Pyrus spp. **pear**
Agrobacterium tumefaciens
Erwinia amylovora
Fabraea maculata

Pyrus pyrifolia (Burm.) Nakai **sand pear**
Erwinia amylovora
Clitocybe tabescens
Fabraea maculata
Glomerella cingulata
Gymnosporangium clavipes
G. haraeanum
G. nootkatense
Pellicularia koleroga
Physalospora obtusa
Rhoradendron flavescens

Quercus acuta Thunb. **Japanese evergreen oak**
Ceratocystis fagacearum

Quercus acutissima Carruthers **sawtooth oak**
Ceratocystis fagacearum

Quercus aliena Blume var. **acuteserrata** Maxim. **Oriental white oak**
Ceratocystis fagacearum

Quercus castaneaefolia C. A. Mey. **chestnutleaf oak**
Ceratocystis fagacearum

Quercus cerris L. **European turkey oak**
Ceratocystis fagacearum
Phymatotrichum omnivorum

Quercus dentata Thunb. **daimyo oak**
Ceratocystis fagacearum

Quercus glandulifera Blume **glandbearing oak**
Ceratocystis fagacearum

Quercus glauca Thunb. **blue Japanese oak**
Ceratocystis fagacearum

Quercus haas Kotschy ——
Ceratocystis fagacearum

Quercus ilex L. **holly oak**
Ceratocystis fagacearum

Quercus longinux Hayata ——
Ceratocystis fagacearum

Quercus macrolepis Kotschy **Valonia oak**
Ceratocystis fagacearum

Quercus myrsinaefolia Blume ——
Ceratocystis fagacearum

Quercus robur L. **English oak**
Ceratocystis fagacearum
Daedalea quercina
Dothiorella quercina
Endothia gyrosa
Marssonina martini
Microsphaera alni
Physalospora glandicola
Polyporus versicolor
Sphaerotheca lanestris
Valsa sordida

Quercus suber L. **cork oak**
Armillaria mellea
Ceratocystis fagacearum
Endothia gyrosa
Sphaerotheca lanestris

Quercus variabilis Blume **Oriental oak**
Ceratocystis fagacearum

Raphiolepis indica (L.) Lindl. **India raphiolepis (India-hawthorn)**
Fabraea maculata
Pellicularia rolfsii

Raphiolepis umbellata (Thunb.) Makino **Yeddo raphiolepis**
Fabraea maculata

Rhamnus cathartica L. **European buckthorn**
Cercospora rhamni
Phyllosticta rhamni
Puccinia coronata

Rhamnus frangula L. **glossy buckthorn**
Puccinia coronata

Rhododendron spp. (cultivated) ——
Alternaria tenuis
Armillaria mellea
Botrytis cinerea
Cercospora handelii
Chrysomyxa ledi var. *rhododendron*
Diplodina eurhododendri
Exobasidium vaccinii
E. vaccinii-uliginosae
Gloeosporium rhododendri
Glomerella cingulata
Microsphaera alni
Pellicularia koleroga
Pestalotia macrotricha

Physalospora abdita
P. obtusa
P. rhodina
Phytophthora cinnamomi
Pycnostysanus azaleae
Pythium irregulare
Rhizoctonia solani
Septoria azaleae
Verticillium albo-atrum

Rhododendron flavum G. Don **Pontic azalea**
Exobasidium burtii
Pucciniastrum myrtilli

Rhododendron indicum (L.) Sweet **indica azalea**
Clitocybe tabescens
Cylindrocladium scoparium
Pythium ultimum

Rhododendron lapponicum (L.) Wahlenb. **Lapland rhododendron**
Chrysomyxa ledi var. *rhododendri*

Rhododendron obtusum (Lindl.) Planch. **Hiryu azalea**
Cylindrocladium scoparium
Phyllosticta rhododendri

Rhodotypos tetrapetala (Sieb.) Makino **jetbead**
Nectria cinnabarina

Ricinus communis L. **castor-bean**
Xanthomonas ricinicola
Alternaria brassicae
A. compacta
A. ricini
Botryosphaeria ribis
Botryotinia ricini
Cercospora ricinella
Clitocybe tabescens
Fusarium scirpi var. *acuminatum*
Pellicularia rolfsii
Phymatotrichum omnivorum
Physalospora abdita
P. obtusa
P. rhodina
Phytophthora parasitica
Pythium intermedium
Rhizoctonia solani
Schizophyllum commune
Sclerotinia sclerotiorum

Rollinia deliciosa Safford **biriba**
Glomerella cingulata

Roystonea spp. **royalpalm**
Colletotrichum gloeosporioides
Graphiola phoenicis
Nectria cinnabarina
Phytophthora palmivora

Salix alba L. **white willow**
Agrobacterium tumefaciens
Asteroma capreae
Botryosphaeria ribis
Cercospora salicina
Cryptodiaporthe salicina
Fomes applanatus
Fusicladium saliciperdum
Gloeosporium salicis
Melampsora abieti-caprearum
M. bigelowii
Phyllosticta apicalis
Physalospora miyabeana
Trametes suaveolens
Uncinula salicis
Valsa sordida

Salix babylonica L. **weeping willow**
Agrobacterium tumefaciens
Botryosphaeria ribis
Cercospora salicina
Cryptodiaporthe salicina
Daedalea confragosa
Fusicladium saliciperdum
Ganoderma lucidum
Melampsora abieti-capraearum
Physalospora miyabeana
P. obtusa
Phytophthora cactorum
Valsa sordida

Salix fragilis L. **crack willow**
Cylindrosporium salicinum
Daedalea confragosa
Fusicladium saliciperdum
Gloeosporium salicis
Melampsora abieti-capraearum
Septoria didyma
Uncinula salicis
Valsa sordida

Salix viminalis L. **basket willow**
Cryptomyces maximus
Melampsora abieti-capraearum
Nectria cinnabarina

Salvia officinalis L. **garden sage**
Cercospora salviicola
Pellicularia rolfsii
Rhizoctonia solani

Sanchezia nobilis Hook. f. ——
Clitocybe tabescens

Sapindus mukorossii Gaertn. var. **carinatus** Radlk. **Chinese soapberry**
Pellicularia koleroga

Sapium sebiferum (L.) Roxb. **tallowtree**
Cercospora stillingiae
Clitocybe tabescens
Phyllosticta stillingiae
Phymatotrichum omnivorum

Schinus molle L. **peppertree**
Armillaria mellea
Fomes applanatus
Ganoderma lucidum
Phymatotrichum omnivorum
Polyporus dryophilus
P. farlowii
P. sulphureus
P. versicolor
Schizophyllum commune

Schinus terebinthifolia Raddi **Brazil peppertree**
Armillaria mellea
Clitocybe tabescens
Phymatotrichum omnivorum
Verticillium albo-atrum

Sciadopitys verticillata (Thunb.) Sieb. & Zucc. **umbrella-pine**
Agrobacterium tumefaciens
Diplodia pinea
Rhizoctonia solani

Solanum pseudocapsicum L. **Jerusalem-cherry**
Phyllosticta pseudocapsici

Sonchus arvensis L. **field sowthistle**
Coleosporium sonchi-arvensis

Sophora davidii (Franch.) Skeels **vetchleaf sophora**
Phymatotrichum omnivorum

Sophora japonica L. **Chinese scholartree (Japanese pagoda-tree)**
Microsphaera alni
Nectria cinnabarina
Phymatotrichum omnivorum
Rhizoctonia solani

Sorbus aucuparia L. **European mountain-ash**
Agrobacterium tumefaciens
Erwinia amylovora
Fabraea maculata
Gymnosporangium aurantiacum
G. libocedri
Nummularia discreta
Phyllosticta sorbi
Physalospora obtusa
Podosphaera oxyacanthae
Septoria sorbi
Valsa leucostoma

Spiraea spp. **spirea**
Agrobacterium rhizogenes
Erwinia amylovora
Heterosporium spiraeae
Microsphaera alni
Phymatotrichum omnivorum
Physalospora obtusa
Podosphaera oxyacanthae
Sphaerotheca humuli

Spiraea thunbergii Sieb. **Thunberg spirea**
Corticium galactinum

Stephanotis floribunda Brongn. **Madagascar stephanotis**
Botrytis elliptica

Stranvaesia davidiana Decne. **Chinese stranvaesia**
Erwinia amylovora
Clitocybe tabescens

Swietenia mahagoni Jacq. **West Indies mahogany**
Phyllachora swieteniae

Symphoricarpos albus (L.) Blake **common snowberry**
Virus—Pierce's vine disease

Syringa amurensis Rupr. **Amur lilac**
Phymatotrichum omnivorum

Syringa ×chinensis Willd. **Chinese lilac**
Phymatotrichum omnivorum

Syringa ×persica L. **Persian lilac**
Cercospora lilacis
Microsphaera alni

Syringa vulgaris L. **common lilac**
Virus—mosaic
Virus—Pierce's vine disease
Agrobacterium tumefaciens
Armillaria mellea
Ascochyta syringae
Botryosphaeria ribis
Botrytis cinerea
Cercospora lilacis
C. macromaculans
Heterosporium syringae
Hymenochaete agglutinans
Microsphaera alni
Pellicularia koleroga
Phymatotrichum omnivorum
Physalospora obtusa

Phytophthora cactorum
Polyporus gilvus
P. versicolor
Sclerotinia sclerotiorum

Tabebuia lepidota (H. B. K.) Britton **trumpet-tree**
Prospodium plagiopus

Tabernaemontana sp. **tabernaemontana**
Gloeosporium tabernaemontanae

Tabernaemontana coronaria Willd. **crape-jasmine**
Clitocybe tabescens

Tamarix spp. **tamarisk**
Phymatotrichum omnivorum
Polyporus sulphureus
Sphaerotheca humuli

Tamarix gallica L. **French tamarisk**
Botryosphaeria tamaricis

Taxus spp. (foreign) **yew**
Botryosphaeria ribis
Pestalotia funerea
Rhizoctonia solani
Sphaerulina taxi

Taxus baccata L. **English yew**
Agrobacterium tumefaciens
Phyllosticta taxi
Phytophthora cinnamomi

Taxus cuspidata Sieb. & Zucc. **Japanese yew**
Phytophthora cinnamomi

Taxus ×media Rehd. **Anglojap yew**
Phytophthora cinnamomi

Tecomaria capensis (Thunb.) Spach **Cape-honeysuckle**
Armillaria mellea
Clitocybe tabescens
Colletotrichum gloeosporioides

Thuja orientalis L. **Oriental arborvitae**
Agrobacterium tumefaciens
Armillaria mellea
Botrytis cinerea
Cercospora thujina
Clitocybe tabescens
Coryneum berckmanii
C. cardinale
Pestalotia funerea
Phomopsis juniperovora
Phymatotrichum omnivorum
Rhizoctonia solani
Valsa abietis

Thujopsis dolobrata (L. f.) Sieb. & Zucc. **Hiba false-arborvitae**
Agrobacterium tumefaciens

Thunbergia grandiflora Roxb. **Bengal clockvine**
Agrobacterium tumefaciens

Thunbergia laurifolia Lindl. **laurel clockvine**
Agrobacterium tumefaciens

Tilia cordata Mill. **littleleaf linden**
Botryosphaeria ribis
Cercospora microsora
Gloeosporium tiliae
Physalospora rhodina

Tilia ×europaea L. **European linden**
Botryosphaeria ribis
Physalospora rhodina

Tilia platyphyllos Scop. **bigleaf linden**
Botryosphaeria ribis
Physalospora rhodina

Trachelospermum jasminoides (Lindl.) Lem. **Chinese star-jasmine**
Cercospora repens
Clitocybe tabescens
Dimerosporium pulchrum

Ulmus carpinifolia Gleditsch **smoothleaf elm**
Ceratocystis ulmi

Ulmus japonica (Rehd.) Sarg. **Japanese elm**
Ceratocystis ulmi

Ulmus laevis Pall. **Russian elm**
Ceratocystis ulmi

Ulmus parvifolia Jacq. **Chinese elm**
Chalaropsis thielavioides
Gloeosporium ulmicolum

Ulmus procera Salisb. **English elm**
Erwinia nimipressuralis
Ceratocystis ulmi
Coniothyrium ulmi
Gloeosporium inconspicuum
G. ulmicolum
Gnomonia ulmea
Mycosphaerella ulmi
Nectria cinnabarina
Phomopsis oblonga
Phyllactinia corylea
Phyllosticta melaleuca
Sphaeropsis ulmicola
Taphrina ulmi
Verticillium albo-atrum

Ulmus pumila L. **Siberian elm**
Erwinia nimipressuralis
Botryosphaeria ribis
Ceratocystis ulmi
Chalaropsis thielavioides
Coniothyrium ulmi
Gloeosporium ulmicolum
Gnomonia ulmea
Nectria cinnabarina
Phymatotrichum omnivorum
Polyporus gilvus
Pythium ultimum
Rhizoctonia solani
Schizophyllum commune
Sphaeropsis ulmicola
Tubercularia ulmea

Viburnum carlesii Hemsl. **Korean-spice**
Cercospora varia
Corticium galactinum

Viburnum davidii Franch. **David viburnum**
Phyllosticta tinea

Viburnum lantana L. **wayfaring-tree**
Cercospora varia
Plasmopara viburni
Polyporus versicolor
Verticillium albo-atrum

Viburnum opulus L. **European cranberry-bush**
Agrobacterium tumefaciens
Botrytis cinerea
Cercospora varia
C. viburnicola
Helminthosporium beaumontii
Microsphaera alni
Pellicularia koleroga
Phyllosticta punctata
Plasmopara viburni
Sphaceloma viburni

Viburnum plicatum Thunb. **Japanese-snowball**
Cercospora tinea
Clitocybe tabescens
Verticillium albo-atrum

Viburnum rhytidophyllum Hemsl. **leatherleaf viburnum**
Clitocybe tabescens

Viburnum tinus L. **laurestinus**
Armillaria mellea
Hendersonia tini
Leptosphaeria tini
Plasmopara viburni
Verticillium albo-atrum

Vinca minor L. **common periwinkle**
Botrytis cinerea

Vitex agnus-castus L. **lilac chastetree**
Cercospora viticis
C. weberi
Phymatotrichum omnivorum

Vitis vinifera L. **European grape**
Virus—Pierce's vine disease

Weigela spp. **weigela**
Agrobacterium tumefaciens
Phymatotrichum omnivorum
Ramularia diervillae

Wisteria spp. **wisteria**
Agrobacterium tumefaciens
Phyllosticta wistariae
Physalospora obtusa

Wisteria sinensis (Sims) Sweet **Chinese wisteria**
Phyllosticta wistariae

Zelkova sp. **zelkova**
Ceratocystis ulmi

Ziziphus jujuba Mill. **common jujube**
Phakopsora zizyphi-vulgaris

Ziziphus mauritiana Lam. **India jujube**
Pellicularia koleroga

AMERICAN FOREST DISEASES POTENTIALLY DANGEROUS TO FORESTS OF FOREIGN COUNTRIES

It was suggested that the writer list the American fungi, mentioned herein, which he considered most likely to cause damage to forests in other countries. The task was undertaken in spite of the impossibility of predicting how two living organisms might react to each other. Each requires certain conditions optimum for its vigor and thrifty growth. If at the time of meeting these conditions are compatible for both, the parasite may establish itself temporarily. It may then survive until another favorable period, and so on indefinitely until the disease is well distributed and, in some cases, builds up to epidemic proportions.

Here, in North America, we have noted that about 20 years elapse before a new forest disease becomes epidemic. The chestnut blight probably required 20 years after Japanese chestnuts were planted in quantities before the disease was found in outbreak condition. White pine blister rust, first known in 1906, was undoubtedly imported in limited quantities about 10 years before, and became epidemic in 1913. The larch canker was imported in 1908 and was found in an outbreak in 1927.

The root rotting fungi appear to be especially dangerous potential enemies of forests of distant regions. They are able to survive and even thrive by living saprophytically on plant debris in the soil. They appear to have the ability to build up vigor so that they can attack living roots in contact with dead infected ones and become truly pathogenic. The impossibility of sterilizing large areas of infected soil makes their introduction to new regions especially serious. The writer believes the following diseases present serious potential threats to foreign forests.

Pierce's virus disease of grape

Threatens the entire grape industry of the Old World. Especially dangerous because of its ability to infect many common crop plants ranging from herbs to trees, and because of its extremely destructive action when infection is severe.

Erwinia amylovora — **fire blight**

Seriously threatens apple, pear, and related orchard industries of many countries and has already escaped to Italy, Japan, and New Zealand.

Erwinia nimipressuralis — **elm wetwood**

While not very destructive to trees attacked, elm wetwood does affect the quality of the heartwood, and because of it the trees certainly are not in their optimum health and vigor. Generally, it resembles the bacterial disease of cricket-bat willow in England.

Xanthomonas corylina — **filbert blight**

Very destructive to filbert trees in the Pacific Northwest. Potentially destructive to foreign nut orchards.

Cephalosporium diospyri — **persimmon wilt**

Causes wilt of native American persimmon trees, known only in the United States; attacks foreign persimmon species, but they are resistant. American species are susceptible, and because of this the pathogen may be of foreign origin. It is a wound parasite. Persimmon-growing countries should exclude it until more is known of its distribution, if any, outside the United States.

Cercospora thujina — **Thuja leaf spot**

Is pathogenic without wounds. Chupp says it is not a Cercospora but a Heterosporium. In 1952 it destroyed over 30,000 plants of *Thuja orientalis* in a Tennessee nursery. Known only in the United States. Might be serious in countries with forests of *Thuja* and related species.

Clitocybe tabescens — **root rot**

Resembles *Armillaria mellea* but has no annular ring on the upper part of the stem, and has no "shoestrings." Aggressively parasitic and destructive to numerous woody plants. It is reported in Great Britain, France, Italy, Madagascar, and China. Should be excluded from uninfected regions.

Coryneum berckmanii — **Coryneum blight**

A destructive blight of oriental arborvitae and Italian cypress. Kills branches and spreads gradually until the tree dies. Much damage has resulted in nurseries and home gardens of the Pacific Northwest. Appears to be a real threat to these trees in the Old World. Should be strictly excluded from uninfected regions.

Cronartium coleosporioides — **western pine stem gall rust**

Inoculations have proved that the autoecious rust of Scotch pine known as "Woodgate rust" in New York is identical with the Rocky Mountain autoecious *Cronartium coleosporioides* on *Pinus ponderosa*. A rust like this, known to attack *P. sylvestris* easily and in a quite different climate than its native one, is a high risk to European and Asian pine forests if it reaches them.

Cronartium comptoniae — **sweetgale blister rust**

A North American hard pine rust with *Myrica gale* an alternate host. The rust is known on the Pacific coast from Prince Rupert to Mount Shasta, and in eastern North America from Nova Scotia southward to the Ohio River, westward to Minnesota. With the holarctic *M. gale* present in the North Temperate Zone around the world, this disease is a real threat to Old World pines if it once gains entry.

Ceratocystis fagacearum — **oak wilt**

Attacks oaks chiefly, but also related species of Fagaceae. Is limited to the United States. Foreign species are susceptible to attack. Logs

or lumber may carry the fungus unless seasoned to a moisture content of less than 20 percent. A real and continuous danger to forests of oak and related trees in other countries.

Ceratocystis fimbriata platani — **canker stain**

Caused tremendous damage in a number of cities by killing thousands of street trees for a number of years. Methods of prevention were found and applied successfully. It is believed to be a native American fungus. Other countries should fear it as a serious threat to London plane, its most susceptible host in the United States.

Cronartium harknessii — **western globoid stem gall**

An autoecious pine stem gall of the Pacific Coast and Rocky Mountain regions is known in eastern Canada and in Central and South America. Not needing alternate hosts, it is a real danger to Old World hard pine forests. It is not yet known whether this is a short cycle form of *Cronartium coleosporioides* of the same general region.

Diplodia pinea — **pine twig blight**

Known distribution on all the continents except Asia appears to make quarantine futile against this destructive fungus. Even so, it may be profitable to prevent free shipment of pine nursery stock into regions where this pest is still absent.

Endothia parasitica — **chestnut blight**

Causes branch and trunk canker of chestnuts, castanopsis, and some oaks in Asia, North America, and Europe. The American stands of chestnut timber have been killed. The disease was carried to Europe during World War I and has spread over many chestnut forests there. It is native in China, Japan, and perhaps India. The destruction is an excellent example of the results of unhindered importation of living plants and parts of plants.

Fusicladium saliciperdum — **willow scab**

Causes olive-brown, velvety pustules crowded along the main veins on the lower surface of willow leaves. Often the young growing twig is killed back to the preceding season's growth; all the leaves wilt. Greatly resembles frost injury. *Salix alba* var. *vitellinum* and *S. cordata* are heavily attacked while others are lightly or not at all affected.

Known in Europe since 1859 and in North America since 1927. Evidently reached North America 10 years or more before discovery. Many thousands of willows of all sizes up to 2 feet or more in diameter were killed within a few years along highways and streams. Experience with a number of immigrant tree diseases has shown that a new parasite requires about 20 years to get firmly established and widely distributed on very susceptible hosts, and to inflict heavy damage. Willow scab is an example of possible unhindered importation of a damaging tree disease.

Gloeosporium ulmicolum — **elm anthracnose**

Causes elongate raised spots following the veins of elm leaves in eastern United States. The habit of the fungus in following the larger

veins of the leaves may indicate ability to inflict damage, and care should be taken not to introduce it into foreign countries with numerous elms.

Guignardi aesculi — **Aesculus leaf blotch**

Causes heavy to complete defoliation of *Aesculus* trees every year or two. Reported as generally distributed where these trees grow in North America and Europe. This leaf blotch might be disastrous to several *Aesculus* species of eastern Asia if it reaches there.

Gymnosporangium libocedri — **Libocedrus-Pomaceae rust**

Native in Oregon and California. Rust of *Libocedrus* with common cultivated rosaceous fruits as alternate hosts. Species of *Libocedrus* native in South America, China, Formosa, New Guinea, New Zealand, and New Caledonia might be endangered if this rust were introduced in their vicinity.

Gymnosporangium nootkatensis — **Alaska cedar rust**

This rust of *Chamaecyparis nootkatensis* with rosaceous alternate hosts is limited to North America. It may be a potential danger to closely similar species of Asian *Chamaecyparis* although its strict limitation to *C. nootkatensis* here may indicate inability to attack other species.

Melampsora abietis-canadensis — **hemlock-poplar rust**

Limited to temperate North America on *Tsuga canadensis* and *T. caroliniana* and *Populus* spp. To *Tsuga* spp. of Himalaya, China, Formosa, and Japan, it appears as a potential enemy.

Melampsora occidentalis — **Douglas-fir—poplar rust**

Native to North America from British Columbia to southern California, eastward to Saskatchewan and Wyoming on *Pseudotsuga* and *Populus* spp. A potential danger to *Pseudotsuga* spp. in western China, Formosa, and Japan.

Peridermium coloradense — **spruce witches'-broom rust**

Life history and alternate hosts unknown. Causes witches'-brooms with deciduous needles on *Picea* spp. Distributed in North America from Newfoundland to Alaska, southward through Canada to northern United States, southward in the Rocky Mountains to central Mexico. Other countries should be wary of receiving this fungus until its alternate hosts, if any, are known.

Phomopsis juniperovora — **cedar blight**

A very destructive nursery disease of Cupressaceae from Oklahoma to Texas and eastward to the Atlantic coast. Causes annual cankers of twigs and branches, often leading to death of the entire plant. Reported from Mozambique and The Netherlands (stock imported from France). A serious potential threat to its known hosts in other countries.

Phyllosticta minima — **maple leaf spot**

Causes rounded maple leaf spots, up to 5 mm. across, yellowish with reddish or purplish borders. Apparently limited to North America. Common. *Acer rubrum* is most susceptible and sometimes severely attacked. It might be undesirable or even destructive in other countries.

Phymatotrichum omnivorum — **root rot**

Causes root rot of many dicotyledonous plants of various types. Dead roots usually have a tangled weft of mycelium running over the outer bark. On it may be small dark-colored sclerotia. It is limited to North America and to areas of calcareous soil of a peculiar type. Comparatively few kinds of plants in such an area are not attacked.

Rhizoctonia ramicola — **silky thread blight**

This pathogen has an aerial habitat. The disease recurs in previously infected broad-leaved plants, probably overwintering as superficial mycelium or in diseased leaves matted together or dangling from twigs by mycelial threads. Known only in Florida. A potential threat to tropical regions.

Scirrhia acicola — **brown spot needle blight**

Causes yellow to brown small spots on the needles of seedling southern pines. The distal end of needles, girdled by spots, gradually die. Multiple infections of single needles soon kill the entire needle. Repeated annual infections kill the newly formed needles leaving the seedlings with scant leafage. Judicious burning of grass and dead leaves in winter, combined with spraying 4–4–50 bordeaux mixture, will check the disease until the trees reach 30 cm. in height, when they can resist this blight. It has been found on 24 species and varieties of pines in the southern States from North Carolina to Texas and inland to Arkansas, Tennessee, and Ohio. Known only in the United States but is a serious potential danger to those warmer countries with important forests of hard pines.

Sclerotium bataticola — **damping-off**

Causes damping-off of coniferous and hardwood seedlings. Widely distributed in North America. Threatening to other regions because of the small, black sclerotia, which presumably survive adverse conditions.

Septoria musiva — **leaf spot, canker**

Common and widely distributed in the United States and Canada on some native and exotic *Populus* spp. and hybrids. It also causes small bark cankers by infections through lenticels. Other fungi attack these cankers soon after they form, and even crowd out the original pathogen. Especially destructive on some *Populus* hybrids and species of European lineage. Distributed only in North and South America. A serious potential threat to poplar cultures of other regions. It can be carried as spores fallen between bud scales, which must be killed by a fungicide.

Thyronectria austro-americana — **hardwoods canker**

Causes cankers on smaller branches, resulting in girdling and tip blight of *Gleditsia* and *Albizia* in the United States, and on the former in Argentina. The proven susceptibility of *G. japonica* indicates possible trouble if this fungus reaches China or Japan.

Trichoscyphella willkommii — **larch canker**

Generally present in larch stands throughout Europe. Found in eastern United States on infected stock of *Larix decidua* imported from Scotland early in the present century. All diseased trees were destroyed, and it is hoped that the disease is eliminated. In Denmark, *L. occidentalis* has been attacked so severely it has been said that it should not be grown in that country. This means that the fungus never should be allowed to reach the native range of this larch in the Pacific Northwest. It is a serious potential danger to larch forests of eastern Asia where the fungus is not yet known.

Uncinula flexuosa — **powdery mildew**

Widespread on *Aesculus* spp. in North America. A potential danger to Old World forests of *Aesculus*.

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